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ABSTRACT

Designed to address the skills that an auto parts specialist must master in order to be effective in the market place, this manual consists of 13 units of instruction. Covered in the units are orientation; human relations; communications; safety; parts and systems identification; stocking, shipping, and receiving; inventory control; cataloging and pricing; applied math for parts specialists; measuring instruments; counter services; related counter skills; and, sales and merchandising. Each unit includes some or all of the following: performance objectives, suggested activities for teachers and students, information sheets, assignment sheets, job sheets, visual aids, tests, and test answers. Written in terms of student performance, the instructional materials in the manual feature a lesson-plan format. (MN)

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ED219655

PARTS SPECIALIST

by

Lou and Debbie Fuqua

Developed by the

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FOREWORD

This text addresses the many skills a good parts specialist must master in order to be effective in the market place. Some of these skills involve the use of catalogs and other references used in finding auto parts. But a good parts specialist also requires skills in math and measuring, skills in identifying parts needs and the tools their repair or replacement require, and skills in handling business forms that keep track of the processes of a busy industry. This text addresses all of these market place requirements as well as the important aspects of safety, good housekeeping, and customer relations.

Truth is, the skills presented here are so utilitarian that they could function well for heavy equipment parts, tractor parts, appliance parts, or for any merchandising system where parts are warehoused, shipped, inventoried, displayed, and sold. In short, *Parts Specialist* presents job-getting skills that truly range the spectrum of versatility.

As time passes, we find that the competency-based MAVCC format continues to lead the way in the classroom. Technical input from instructors and industry representatives in the 11-state MAVCC membership continues to be the cornerstone of MAVCC curriculum development. This regional perspective is clearly reflected in *Parts Specialist*, and we feel the text will answer needs for programs in many parts of America.

Instructional materials in this publication are written in terms of student performance, and the criterion referenced tests provide for uniform measurement of student progress. The lesson-plan format should provide instructors with more time to reinforce objectives by inviting resource persons into the classroom to talk with students, and by using media and other appropriate teaching aids to personalize the process and motivate students in their learning endeavors.

The long romance that America has had with its automobiles has become a more practical relationship in the past few years, but auto parts continues to be an intriguing world of its own where a good parts specialist has continuing job opportunities and room for advancement. We feel the proper use of this publication will provide a busy industry with competent new members.

Merle Rudebusch, Chairman
Board of Directors
Mid-America Vocational
Curriculum Consortium

PREFACE

Auto parts range in size from thumb-nail to much bigger than a bread basket, and they range in number to the tens of thousands. The fun part of developing *Parts Specialist* was to see how logically the auto parts industry puts them all together in a merchandising system comparable to any. The skills required in the auto parts industry are covered in this text just as logically as the industry developed them. The "quantity" is certainly here, but best of all, *Parts Specialist* is a "quality" publication with an "affordable" price.

Parts Specialist is a unique text because of its appealing universality. Age limits have minimal restrictions and the demand is nationwide. The text can function well in a secondary program in North Dakota or in an adult education program in south Texas. In short, it provides a convenient text for those requiring short-term programs that produce job-ready skills.

Your response to the text will be appreciated by the Development Division at MAVCC. Suggestions from instructors in the classroom give us significant clues for rewriting and updating. When you take time to write or call, we take time to listen. We're specialists in that part of curriculum development.

Ann Benson
Exective Director
Mid-America Vocational
Curriculum Consortium

ACKNOWLEDGEMENTS

Appreciation is extended to the many individuals who contributed their time and talent to the development of *Parts Specialist*.

The resource panel which planned and reviewed the manual deserves a special thank you. That panel includes:

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Special appreciation is extended to the Curriculum and Instructional Materials Center of the Oklahoma State Department of Vocational-Technical Education, Stillwater, Oklahoma, for permission to reprint the valuable illustrations that appear in many of the transparency masters in units V and XI of this text.

Appreciation is also expressed to the typing and art department of the Graphics Division of the Oklahoma State Department of Vocational-Technical Education for their hard work in the project, and to the members of the Oklahoma State Vo-Tech print shop for their fine service in printing the text.

A final thank you goes to Mary Kellum, Jane Huston, and Dan Fulkerson, the MAVCC editors whose endeavors helped put it all together.

USE OF THIS PUBLICATION

Instructional Units

Parts Specialist contains 13 units. Each instructional unit includes some or all of the basic components of a unit of instruction: performance objectives, suggested activities for teachers and students, information sheets, assignment sheets, job sheets, visual aids, tests, and answers to the test. Units are planned for more than one lesson or class period of instruction.

Careful study of each instructional unit by the teacher will help to determine:

A. The amount of material that can be covered in each class period
B. The skills which must be demonstrated
    1. Supplies needed
    2. Equipment needed
    3. Amount of practice needed
    4. Amount of class time needed for demonstrations
C. Supplementary materials such as pamphlets or filmstrips that must be ordered
D. Resource people who must be contacted

Objectives

Each unit of instruction is based on performance objectives. These objectives state the goals of the course, thus providing a sense of direction and accomplishment for the student.

Performance objectives are stated in two forms: unit objectives, stating the subject matter to be covered in a unit of instruction; and specific objectives, stating the student performance necessary to reach the unit objective.

Since the objectives of the unit provide direction for the teaching-learning process, it is important for the teacher and students to have a common understanding of the intent of the objectives. A limited number of performance terms have been used in the objectives for this curriculum to assist in promoting the effectiveness of the communication among all individuals using the materials.

Following is a list of performance terms and their synonyms which may have been used in this material:

Name	Identify	Describe
Label	Select	Define
List in writing	Mark	Discuss in writing
List orally	Point out	Discuss orally
Letter	Pick out	Interpret
Record	Choose	Tell how
Repeat	Locate	Tell what
Give	Label	Explain

Order
Arrange
Sequence
List in order
Classify
Divide
Isolate
Sort

Distinguish
Discriminate
Differentiate

Construct
Draw
Make
Build
Design
Formulate
Reproduce
Transcribe
Reduce
Increase
Figure

Demonstrate
Show your work
Show procedure
Perform an experiment
Perform the steps
Operate
Remove
Replace
Turn off/on
(Dis) assemble
(Dis) connect

Additional Terms Used
Evaluate
Complete
Analyze
Calculate
Estimate
Plan
Observe
Compare
Determine
Perform
Prepare
Make
Read
Tell
Teach
Converse
Lead
State
Write

Reading of the objectives by the student should be followed by a class discussion to answer any questions concerning performance requirements for each instructional unit.

Teachers should feel free to add objectives which will fit the material to the needs of the students and community. When teachers add objectives, they should remember to supply the needed information, assignment and/or job sheets, and criterion tests.

Suggested Activities for the Instructor:

Each unit of instruction has a suggested activities sheet outlining steps to follow in accomplishing specific objectives. Duties of instructors will vary according to the particular unit; however, for best use of the material they should include the following: provide students with objective sheet, information sheet, assignment sheets, and job sheets; preview filmstrips, make transparencies, and arrange for resource materials and people; discuss unit and specific objectives and information sheet; give test. Teachers are encouraged to use any additional instructional activities and teaching methods to aid students in accomplishing the objectives.

Information Sheets

Information sheets provide content essential for meeting the cognitive (knowledge) objectives in the unit. The teacher will find that the information sheets serve as an excellent guide for presenting the background knowledge necessary to develop the skill specified in the unit objective.

Students should read the information sheets before the information is discussed in class. Students may take additional notes on the information sheets.

Transparency Masters

Transparency masters provide information in a special way. The students may see as well as hear the material being presented, thus reinforcing the learning process. Transparencies may present new information or they may reinforce information presented in the information sheets. They are particularly effective when identification is necessary.

Transparencies should be made and placed in the notebook where they will be immediately available for use. Transparencies direct the class's attention to the topic of discussion. They should be left on the screen only when topics shown are under discussion.

Job Sheets

Job sheets are an important segment of each unit. The instructor should be able to and in most situations should demonstrate the skills outlined in the job sheets. Procedures outlined in the job sheets give direction to the skill being taught and allow both student and teacher to check student progress toward the accomplishment of the skill. Job sheets provide a ready outline for students to follow if they have missed a demonstration. Job sheets also furnish potential employers with a picture of the skills being taught and the performances which might reasonably be expected from a person who has had this training.

Assignment Sheets

Assignment sheets give direction to study and furnish practice for paper and pencil activities to develop the knowledges which are necessary prerequisites to skill development. These may be given to the student for completion in class or used for homework assignments. Answer sheets are provided which may be used by the student and/or teacher for checking student progress.

Test and Evaluation

Paper-pencil and performance tests have been constructed to measure student achievement of each objective listed in the unit of instruction. Individual test items may be pulled out and used as a short test to determine student achievement of a particular objective. This kind of testing may be used as a daily quiz and will help the teacher spot difficulties being encountered by students in their efforts to accomplish the unit objective. Test items for objectives added by the teacher should be constructed and added to the test.

Test Answers

Test answers are provided for each unit. These may be used by the teacher and/or student for checking student achievement of the objectives.

PARTS SPECIALIST

INSTRUCTIONAL ANALYSIS

JOB TRAINING: What the Worker Should Be Able to Do (Psychomotor)	RELATED INFORMATION: What the Worker Should Know (Cognitive)

UNIT I: ORIENTATION

1. Terms and definitions
2. Responsibilities of a parts specialist and their processes
3. Areas of job opportunities for parts specialists
4. Areas of advancement potential for parts specialists
5. Types of salaries available to parts specialists
6. Fringe benefits frequently available to parts specialists
7. Working conditions which a parts specialist may expect
8. Personal attributes of a good employee and their significance
9. Steps in preparing for an interview
10. Steps in meeting a receptionist/secretary
11. Positive ways to begin an interview
12. Special considerations for answering questions
13. Ways to maintain an interviewer's interest
14. Steps in closing an interview
15. Ways to successfully follow up an interview

JOB TRAINING: What the Worker Should Be Able to Do (Psychomotor)

RELATED INFORMATION: What the Worker Should Know (Cognitive)

16. Write a resume
17. Complete an employment application form
18. Practice answering interview questions

UNIT II: HUMAN RELATIONS

1. Terms and definitions
2. Reasons why we study personality
3. Steps for improving your personality
4. Characteristics of a good personality
5. Characteristics of a good fellow worker
6. Undesirable personality traits and their meanings
7. Reasons why people work
8. Ways people are different
9. Basic ways for getting along with people
10. Expectations of an employer
11. Expectations of an employee
12. Human relations with fellow workers

13. Rate your grooming and wardrobe habits
14. Conduct a personality survey of a salesperson at work

JOB TRAINING: What the Worker Should Be Able to Do (Psychomotor)	RELATED INFORMATION: What the Worker Should Know (Cognitive)
UNIT III: COMMUNICATIONS	
	1. Terms and definitions
	2. Factors necessary for effective communication
	3. Ways to achieve effective communication
	4. Proper way to introduce yourself
	5. Ways to get more out of casual conversations
	6. Factors necessary for communicating product information
	7. General rules for proper telephone use
	8. Steps in handling interruptions with telephone customers
	9. Information needed to complete a telephone order
	10. The correct method for leaving a telephone unattended
	11. Ways to use the telephone as a sales and advertising tool
	12. Other tips for intelligent telephone use
13. Pronounce words distinctly	
14. Use proper English	
15. Analyze voice qualities	
UNIT IV: SAFETY	
	1. Terms and definitions
	2. Rules for personal safety
	3. Rules for general store safety

JOB TRAINING: What the Worker Should Be Able to Do (Psychomotor)

RELATED INFORMATION: What the Worker Should Know (Cognitive)

4. Classes of fires and their definitions
5. Fire extinguishers and the classes of fires they are designed to extinguish
6. OSHA regulations for battery safety
7. General rules for battery safety
8. Potential battery hazards and ways to avoid them
9. Personal safety rules for working with batteries
10. First aid procedures for personal acid splashes
11. Emergency procedures for acid spills on floors and machinery
12. Safety rules concerning flammable liquids
13. Housekeeping rules for warehouses and stockrooms
14. Housekeeping rules for counter and display areas

15. Complete the individual student safety inspection

UNIT V: PARTS AND SYSTEMS IDENTIFICATION

1. Systems of an automobile and their definitions
2. Basic components of an automobile engine
3. Basic components of a fuel system
4. Basic components of a cooling system

JOB TRAINING: What the Worker Should Be Able to Do
(Psychomotor)

RELATED INFORMATION: What the Worker Should Know
(Cognitive)

5. Basic components of a heating system
6. Basic components of an air conditioning system
7. Basic components of a conventional ignition system
8. Basic components of an electronic ignition system
9. Basic components of a starting system
10. Basic components of a charging system
11. Basic components of an exhaust system
12. Basic components of an emission system
13. Basic components of a drive train
14. Basic components of a front suspension system
15. Basic components of a MacPherson strut suspension system
16. Basic components of a conventional steering system
17. Basic components of a power steering system
18. Basic components of a rack and pinion steering system
19. Basic components of a disc brake system
20. Basic components of a body system
21. Basic systems and tools and supplies needed to repair them

JOB TRAINING: What the Worker Should Be Able to Do
(Psychomotor)

22. Solve problems concerning basic engine service needs

23. Solve problems concerning basic cylinder head and valve service

24. Solve problems concerning basic ring and bearing service

25. Solve problems concerning additional basic engine services

26. Solve problems concerning basic fuel system services

27. Solve problems concerning basic carburetor and pump services

28. Solve problems concerning basic cooling system service

29. Solve problems concerning basic ignitions system services

30. Solve problems concerning electrical system services

31. Solve problems concerning basic exhaust and emission system services

32. Solve problems concerning basic drive train system services

33. Solve problems concerning basic suspension and steering system services

34. Solve problems concerning basic braking system services

35. Solve problems concerning basic body system parts and supplies

RELATED INFORMATION: What the Worker Should Know
(Cognitive)

UNIT VI: STOCKING, SHIPPING, AND RECEIVING

1. Terms and definitions
2. The organization of parts bins
3. Forms of transportation used in shipping parts
4. Forms used in shipping parts

JOB TRAINING: What the Worker Should Be Able to Do (Psychomotor)	RELATED INFORMATION: What the Worker Should Know (Cognitive)
	5. Methods of payment used in shipping and receiving parts
	6. Procedure for receiving shipments
	7. Steps for filling and packing an order
8. Arrange a parts bin	
9. Check in and stock parts	
10. Fill and pack an order	

UNIT VII: INVENTORY CONTROL

	1. Terms and definitions
	2. Needs fulfilled by good inventory control
	3. Items included on inventory cards and their purposes
	4. Purposes for taking inventory
	5. Guidelines for taking a physical inventory
	6. Perpetual and physical inventories
	7. Advantages of computers in inventory control
	8. National coding sytem for popularity of parts
	9. Regional coding systems for popularity of parts
10. Fill out an inventory control card	
11. Take a physical inventory	

UNIT VIII: CATALOGING AND PRICING

	1. Terms and definitions
	2. Four major catalog indexing systems

JOB TRAINING: What the Worker Should Be Able to Do (Psychomotor)	RELATED INFORMATION: What the Worker Should Know (Cognitive)
	3. Types of information found in catalogs
	4. Basic steps for looking up a part in a catalog
	5. How to price parts correctly
	6. The microfiche system and how to use it
7. Use an engine parts catalog	
8. Use a master gasket catalog	
9. Use a brake parts catalog	
10. Use an exhaust system catalog	
11. Use a chassis parts catalog	
12. Use footnotes from a catalog	
13. Set up a catalog index system	

UNIT IX: APPLIED MATH FOR PARTS SPECIALISTS

	1. Terms and definitions and samples of each
	2. Advantages of a decimal equivalent chart
	3. Uses for fractions
	4. Uses for decimal equivalents
	5. Methods of expressing fractions and decimal equivalents
	6. Terms related to percent
7. Add, subtract, multiply, and divide fractions	
8. Add, subtract, multiply, and divide decimal equivalents	
9. Convert fractions to decimal form	
10. Write fractions as decimals and percents	

JOB TRAINING: What the Worker Should Be Able to Do
(Psychomotor)

11. Write percents as fractions and decimals
12. Write decimals as fractions and percents
13. Compute discounts and sales prices
14. Use the Decimal Equivalent Chart
15. Use the English-Metric Conversion Chart

RELATED INFORMATION: What the Worker Should Know
(Cognitive)

UNIT X: MEASURING INSTRUMENTS

1. Terms and definitions
2. Basic units of measurement found on rules
3. Types of rules used in shop store work
4. Purpose of the measurement transfer
5. Procedures for using rules
6. Steps for reading a rule
7. Types of measurements found on outside micrometers
8. Major parts of an outside micrometer
9. Steps in selecting the proper size outside micrometer
10. Rules for use and care of micrometers
11. The term *feel* in using a micrometer
12. Methods for checking accuracy of outside micrometers
13. Parts of an inside micrometer
14. Uses of an inside micrometer
15. Accessories used with an inside micrometer

JOB TRAINING: What the Worker Should Be Able to Do (Psychomotor)

19. Draw lines
20. Measure lines
21. Apply line measurement
22. Apply circular measurement
23. Read plain micrometer settings
24. Read vernier micrometer settings
25. Read inside micrometer settings
26. Use a plain micrometer
27. Use a vernier micrometer
28. Use an inside micrometer

RELATED INFORMATION: What the Worker Should Know (Cognitive)

16. Methods for checking the accuracy of an inside micrometer
17. Plain micrometer settings
18. Vernier micrometer settings

UNIT XI: COUNTER SERVICES

1. Terms and definitions
2. Hand tools and service equipment commonly sold in parts stores
3. Different types of fasteners
4. Ways of measuring bolts and threads
5. Items needed to write up a sales ticket or invoice
6. Handling exhange items and cores
7. Handling defective items
8. The correct way to accept "new" returned merchandise for credit

JOB TRAINING: What the Worker Should Be Able to Do
(Psychomotor)

RELATED INFORMATION: What the Worker Should Know
(Cognitive)

9. Procedures used in filling a battery with electrolyte

10. Complete a sales ticket

11. Complete a credit memo

12. Measure battery electrolyte with a hydrometer

13. Load test a battery

UNIT XII: RELATED COUNTER SKILLS

1. Terms and definitions

2. Procedure for accepting checks

3. Procedure for accepting credit cards

4. Precautions for handling money orders

5. Precautions for handling travelers checks

6. Office machines commonly used in a parts house

7. Count change

8. Figure sales tax

9. Accept checks

10. Operate a credit card machine

UNIT XIII: SALES AND MERCHANDISING

1. Terms and definitions

2. Five basic sales steps

3. Traits of a successful salesperson

4. Procedures for waiting on customers

JOB TRAINING: What the Worker Should Be Able to Do (Psychomotor)	RELATED INFORMATION: What the Worker Should Know (Cognitive)
	5. Basic display arrangements
	6. Purposes of displays
	7. Placement of interior displays
	8. Major types of advertising media
9. Design a display	

PARTS SPECIALIST

TOOLS AND EQUIPMENT LIST

Tape recorder
Parts bin (empty)
Dividers
Shelves
Letters and numbers for bin identification
Assortment of parts
Large cardboard boxes
Packing slip
Tags for numbering or labeling parts
Order form
Parts bin with merchandise on shelves
Packing material
Tape and string
Address label
Invoice
Inventory sheet
Pencil
Clipboard
Catalog racks and dividers or tabs
Assorted catalogs and price sheets
Counter or table
0"-1.000" plain micrometer
1.000"-2.000" plain micrometer
Lathe or vise
Workpieces to include:
  1. Assortment of 5 new fractional drill bits
  2. Assortment of 5 New letter size drill bits
  3. Assortment of 5 pieces of metal such as cold rolled stock, machined parts, and hardened dowels

0"-1.000" vernier micrometer
1.000"-2.000" vernier micrometer
Cleaning cloth or paper
Inside micrometer set
Assortment of 10 bored or drilled holes or pip rings in varying sizes
Hydrometer
Shop towels
Container of clean water
Battery that needs charging
Battery capacity tester
Appropriate conductors for load testing battery
Cash drawer with assortment of cash and bills
Credit card machine
Credit card
Credit card forms
Boxes, stands, tables, and other props for displays
Variety of parts or merchandise for display

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ORIENTATION
UNIT I

UNIT OBJECTIVE

After completion of this unit, the student should be able to match job responsibilities of a parts specialist with their processes and list the advancement potential and benefits available to parts specialists. The student should also be able to respond to interview questions, write a resume, and complete an employment application form for a job as a parts specialist. This knowledge will be evidenced by correctly performing the procedures outlined in the assignment sheets and by scoring 85 percent on the unit test.

SPECIFIC OBJECTIVES

After completion of this unit, the student should be able to:

1. Match terms related to orientation with their correct definitions.
2. Match responsibilities of a parts specialist with their processes.
3. List five areas of job opportunities for parts specialists.
4. List four areas of advancement potential for parts specialists.
5. Complete a list of types of salaries available to parts specialists.
6. Select true statements concerning fringe benefits frequently available to parts specialists.
7. Complete a list of working conditions which a parts specialist may expect.
8. Match personal attributes of a good employee with their significance.
9. List six steps in preparing for an interview.
10. Arrange in order the steps in meeting a receptionist/secretary.
11. Complete a list of positive ways to begin an interview.
12. Select true statements concerning special considerations for answering questions clearly.
13. List four ways to maintain an interviewer's interest.
14. Solve a problem concerning steps in closing an interview.
15. Complete a list of ways to successfully follow up an interview.
16. Write a resume.
17. Complete an employment application form for a job as a parts specialist.
18. Practice answering interview questions.

ORIENTATION
UNIT I

SUGGESTED ACTIVITIES

I. Provide student with objective sheet.

II. Provide student with information and assignment sheets.

III. Make transparencies.

IV. Discuss unit and specific objectives.

V. Discuss information and assignment sheets.

VI. Take a field trip to a parts warehouse and/or a jobbing store or dealership.

VII. Conduct a mock job interview with several students in front of the class.

VIII. Invite a local business owner to talk to students about what an employer usually looks for in prospective employees.

IX. Read carefully the "Suggested Activities" in Unit V and order well in advance the ASIA materials that will be needed for students to properly complete the assignment sheets in Unit V.

X. Give test.

INSTRUCTIONAL MATERIALS

I. Included in this unit:
  A. Objective sheet
  B. Information sheet
  C. Transparency masters
    1. TM 1--Personal Attributes of a Good Employee
    2. TM 2--Appropriate Dress
    3. TM 3--Take the Time To Be On Time
  D. Assignment sheets
    1. Assignment Sheet #1--Write a Resume
    2. Assignment Sheet #2--Complete an Employment Application Form for a Job as a Parts Specialist
    3. Assignment Sheet #3--Practice Answering Interview Questions
  E. Test
  F. Answers to test

II. References:

A. *Auto Parts Clerk*. Tallahassee, FL 32306: Division of Vocational Education, Florida Department of Education, 1977.

B. Notgrass, Troy. *Auto Partsman, Coordinator's Guide*. Austin, TX: Instructional Materials Center, University of Texas at Austin, 1975.

C. *Automotive Wholesaler Counterman's Handbook*. Chicago, IL 60611: Automotive Service Industry Association, 1977.

ORIENTATION
UNIT I

INFORMATION SHEET

I. Terms and definitions

   A. Accountable--The conduct of business affairs in such a manner that the receipt, storage, and marketing of merchandise can be systematically controlled and recorded

   B. Requisition--A written request authorizing purchase of specific goods; may be referred to as a purchase order

   C. Invoice--An itemized list of goods shipped; usually accompanied with a request for payment

   D. Free enterprise--The freedom of private business to organize and operate for profit with minimum government regulation

   E. Jobber--A wholesaler who sells to dealers, garages, and do it yourselfers

II. Responsibilities of a parts specialist and their processes

   A. Receiving--Receives, stores, and issues equipment, materials, supplies, merchandise, or tools in an accountable procedure

   B. Recording--Compiles stock records in a stockroom or warehouse

   C. Unit inventory--Counts, sorts, or weighs incoming articles to verify receipt of items on requisitions or invoices

   D. Inspection--Examines stock to verify that it conforms to specifications, and lists shortages

   E. Storage--Places articles in bins, on shelves, or in floor areas according to identifying information such as style, size, or type

   F. Counter work--Fills orders or issues supplies from stock; may include inside sales and waiting on customers

   G. Inventory control--Compiles reports of adjustments of inventory counts and stock records related to stock damaged, shipments refused, and location changes

III. Areas of job opportunities for parts specialists

   A. Jobbers

   B. Automotive dealers

   C. Truck dealers

   D. Mass merchandisers (Sears, K-Mart)

INFORMATION SHEET

- E. Implement dealers
- F. Heavy equipment dealers
- G. Marine and small engine dealers

IV. Areas of advancement potential for parts specialists

- A. Shipping and receiving
- B. Delivery
- C. Counter person
- D. Department manager
- E. Purchasing
- F. Store Manager
- G. Outside sales
- H. Owner

V. Types of salaries available to parts specialists

- A. Hourly
- B. Weekly
- C. Monthly
- D. Commission
- E. Combination of salary and commission

VI. Fringe benefits frequently available to parts specialists

- A. Hospitalization and accident insurance
- B. Profit sharing
- C. Employee discounts
- D. Paid vacation
- E. Uniform

VII. Working conditions which parts specialists may expect

- A. Comfortable working conditions
- B. The workplace is relatively clean
- C. The work is challenging and seldom dull

INFORMATION SHEET

VIII. Personal attributes of a good employee and their significance (Transparency 1)

A. Enthusiasm and interest--This includes taking pride in your work and being willing to do more than your share when needed

B. Dedication and dependability--This involves good work habits which include regular attendance and being on time; it also means the ability to understand and follow instructions

C. Alertness, quickness of mind--You should always look for unsafe situations that could injure workers or damage property, and you should constantly look for more efficient working practices

D. Honesty and integrity--Employees should give truthful information both to customers and to their employer

E. Desire to work--Do things on your own initiative; don't wait to be told

F. Ability to work with others--Have a positive attitude and control your temper

G. Desire to improve one's self--Good employees always look for ways to increase their knowledge; this benefits both the employer and employee

H. Put in a day's work for a day's pay--Be conscious of waste in materials and time

I. Be safety conscious--Follow safety regulations and develop safe working habits; horseplay is not allowed

IX. Steps in preparing for an interview

A. Wear appropriate clothing and shoes (Transparency 2)

(NOTE: Dress better for the interview than you would for a day on the job. This includes well coordinated clothing; avoid wearing sneakers, sandals, or hats.)

B. Be well-groomed and neat

(NOTE: For a woman, this means neat hair and appropriate jewelry, for a man, neatly trimmed hair and beard, if he wears one.)

C. Take an ink pen, several copies of your resume, and all information concerning social security number, references, names and addresses, dates employed, and dates you attended school

D. Go alone; do not take parents or friends

E. Do not be late (Transparency 3)

(NOTE: Allow adequate time to complete a job application form.)

INFORMATION SHEET

F. Find out facts about the interviewer ahead of time

(NOTE: Obtain this information from the receptionist.)

1. Name

(NOTE: Make sure you have the correct pronunciation.)

2. Title

G. Know facts about the business

1. Name
2. Kind of business
3. Products and services
4. How old the company is and where the plants, offices, or stores are located

(NOTE: This information may be hard to obtain, but be observant in the waiting room; ask receptionist for brochure on company.)

X. Steps in meeting a receptionist/secretary

A. Smile

B. Introduce yourself, stating that you have an appointment

Example: "Good morning. I am Terry McKracken and am applying for a job I have a 10:00 appointment with Mr. Smith."

C. Follow receptionist's instructions

D. Wait patiently

XI. Positive ways to begin an interview

A. Smile and establish eye contact

B. Listen carefully

C. Enter with poise

D. Greet the interviewer by name

E. Shake hands firmly

F. Introduce yourself

G. State purpose of call

H. Be seated only at interviewer's invitation

INFORMATION SHEET

I. Do not show signs of nervousness

(NOTE: If you do not know where to put your hands, leave them on your lap and keep them still.)

J. Do not place personal things on interviewer's desk

K. Do not smoke or chew gum

L. Look alert, interested, and enthusiastic

(NOTE: Words such as Mr., Mrs., Miss, Ms., thank you, please, and Sir never go out of style.)

XII. Special considerations for answering questions clearly

A. Do not interrupt

B. Anticipate questions that might be asked and volunteer proper information

C. Explain yes and no answers

D. Avoid criticisms of former employers or competitors

E. Do not talk about personal problems

F. Answer all questions honestly

Examples: "The thing I liked least about my last job was that I was on the night shift and couldn't get changed. I really wanted to be home with my family at night."

"Truthfully, my relationship with my supervisor could have been better. We seemed to have a personality conflict and never became fond of each other. However, we did manage to work together. This was my first experience like that and I surely hope it doesn't happen again."

G. Give positive answers to unfavorable questions

Examples: Interviewer: "Your work experience doesn't seem to relate specifically to this job. Why do you feel qualified to fill this position?"

Applicant: "I do understand your concern. However, my job experience is broad enough to permit me to work into this particular situation. I have done work similar to this job and I think my general work record is good enough to convince you that I would be a good employee. I would be willing to receive additional training."

INFORMATION SHEET

H. Find a true, positive statement about your reasons for leaving previous jobs, even if you were fired

Examples: "I was laid off, but I learned from my mistakes."

"I left because they did not need as many employees during the slow season."

I. Try to mention your best qualities in relation to something concrete

Example: "I earned 75 percent of my expenses while going to school" is better than "I am a hard worker and want to get ahead."

J. Be prepared for personal questions about your home life and parents' occupations

(NOTE: These questions are inappropriate but are sometimes asked by the interviewer.)

K. Avoid questions concerning politics, economics, religion, and other controversial subjects

L. Answer questions about career objectives using specific terms about what you would like to do in the near future in that particular field without limiting your opportunities

Example: "I would like to work as a parts specialist and go to school part time; my ultimate goal is to get into outside sales."

XIII. Ways to maintain an interviewer's interest

A. Look directly at interviewer

B. Speak in clear, moderate tones

C. Use correct English

(NOTE: Avoid swearing, slang terms, or annoying phrases like "yeah," "you know" or "uhhuh.")

D. Show interest in the business; ask questions

Example: Incorrect: "Listen, I need to know if you have any benefits."

Incorrect: "Now that you've questioned me, there are a few things that I want to know before I decide about the job."

Correct: "I wonder if you could give me some information about the benefits available to employees?"

E. Sell yourself

(NOTE: Never refer to yourself as just average or fair. Always look for a positive response.)

INFORMATION SHEET

F. Give the interviewer the opportunity to mention salary and fringe benefits

G. Act enthusiastically

XIV. Steps in closing an interview

A. Watch for signs that the interview is over, such as the interviewer shuffling papers and moving around in a chair

B. Ask "May I say one thing more?" or "Would you be interested in . . .?" if the interviewer seems to be ending before all important selling points have been made

C. Thank the interviewer for his/her time

Example: "I've enjoyed talking to you, Mr. Smith. Thank you for your time and consideration. I'm excited about this job and do hope I'm hired. Can you tell me when the position will be filled and how the applicants will be notified? (Answer) Please let me know if you need any additional information."

D. Learn from every situation even if the interviewer does not offer the position

XV. Ways to successfully follow up an interview

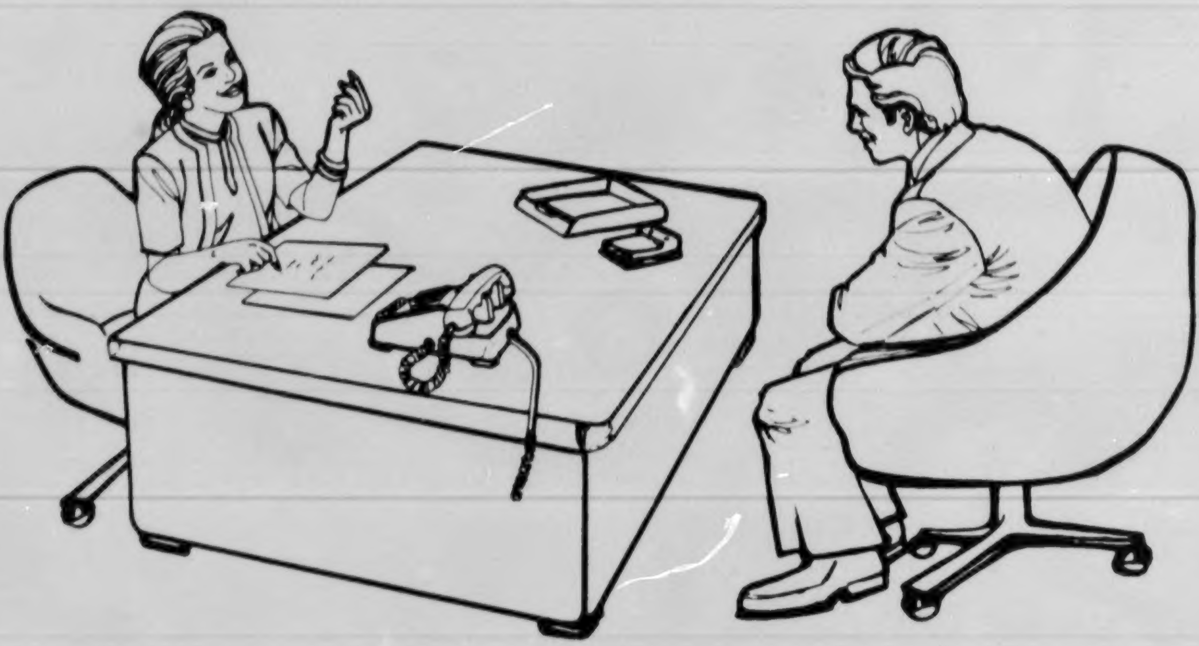
A. Write a thank you letter

B. Make a phone call

C. Make another visit to express interest in the job and to express your appreciation for the opportunity to interview

Personal Attributes Of A Good Employee

Enthusiasm, Interest, Dedication, Dependability, Alertness, Quickness of Mind, Honesty, Integrity, Desire to Work, Ability to Work with Others, Desire to Improve One's Self



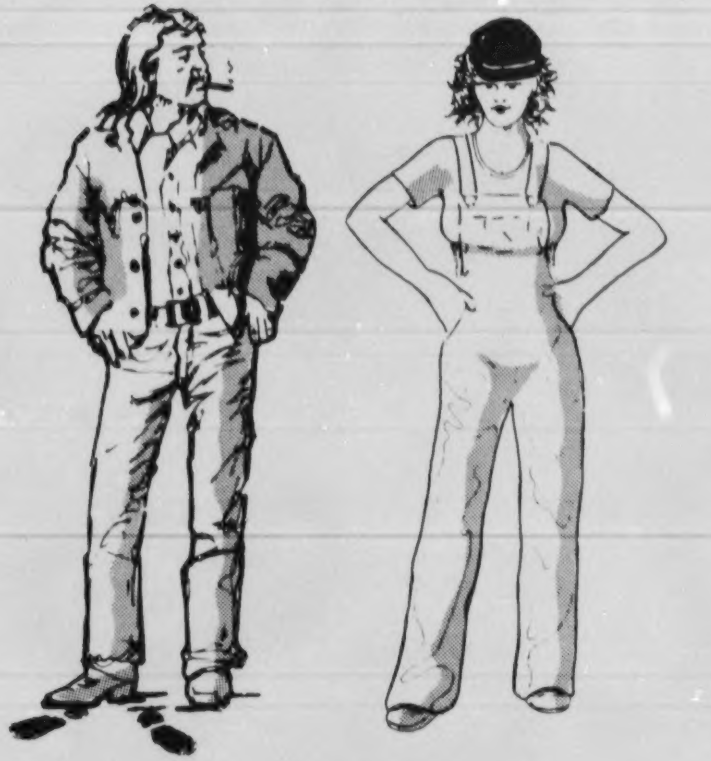
Appropriate Dress

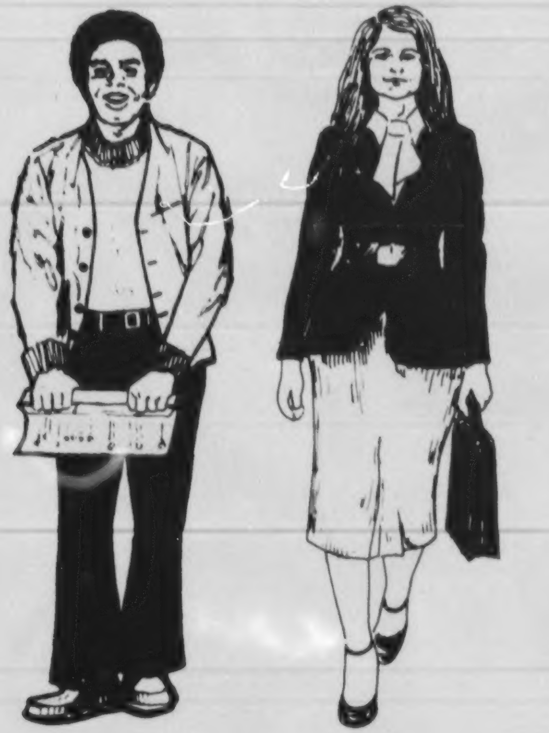
Hair neatly trimmed and Combed ?

Conservative and Coordinated Clothing ?

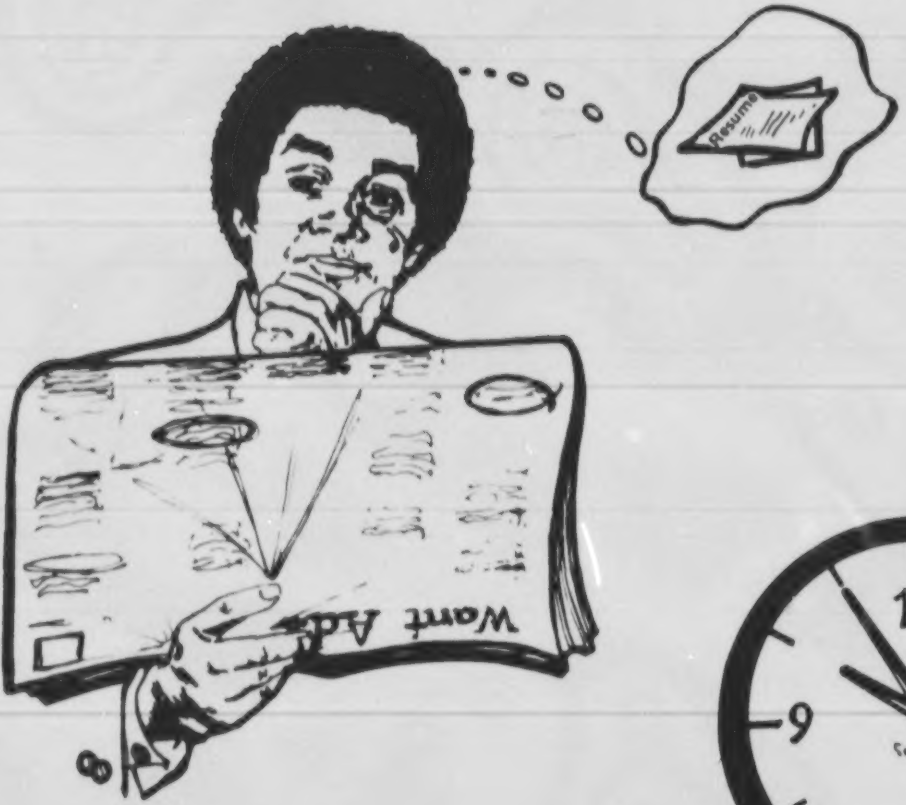
Shoes in Good Repair ?

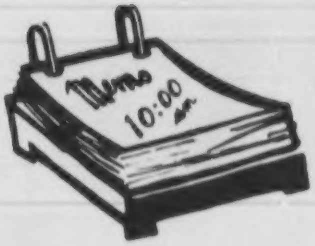
Well-Groomed ?





Take the Time to be on Time


Resume
Want Ads


Memo
10:00
am

ORIENTATION
UNIT I

ASSIGNMENT SHEET #1--WRITE A RESUME

Write a resume using facts about yourself. Use the information below and the sample resume included in this assignment sheet as guides. A good resume should immediately give prospective employers a brief summary of your accomplishments, educational background, work experience, skills, and job objective. It is not necessary to use the exact wording and outline form used on the sample resume, but it is necessary that your resume be neat and balanced and contain all the information which might help you get a job. Keep a current copy of the resume and use it to apply for jobs.

1. Inspect several resume formats and choose one that best fits your needs or use the example included in this assignment sheet as a guide
2. Type your resume on 8 1/2 x 11 inch white paper; try not to exceed two pages
3. Keep resume error free

   (NOTE: Many employers will not consider persons who have resumes that include misspelled words and typographical errors.)
4. Use outline form
5. Put your name prominently at the top in the upper left-hand corner; beneath name, give full street address, city, state, zip code, telephone number with area code, and a number where messages can be accepted

   (NOTE: Leave space at upper right for a wallet size photo.)
6. Under Personal Data include birthdate, height, weight, health, and marital status. Do not include religious and political affiliations
7. Describe your job objective or career goal briefly
8. Describe your educational background, giving names of schools, dates of enrollment, and diploma or degrees received
9. List related subjects studied; include grade averages, if favorable
10. List student activities and awards
11. List hobbies and extracurricular activities, if they are relevant
12. List your past employment, starting with your most recent job. Include name of firm, mailing address, job title, starting and ending dates of employment, name of immediate supervisor, and phone number
13. List duties of your last job

    (NOTE: Concentrate on skills you have used; let employer know what you can do; remember, you have to prove your value to the business, expecially if you have little experience.)

ASSIGNMENT SHEET #1

14. List three persons as character references; include complete mailing addresses and phone numbers

    (NOTE: Ask permission before you use anyone as a reference, and select people who know about your skills.)

15. List one or more jobs or work references, include people that you have actually worked for

    (NOTE: Avoid listing relatives or close friends as a reference unless you have actually worked for them on a salary basis.)

16. Write "Confidential" at the top of the resume if you don't want your current employer to know you are looking for other employment

17. Proofread your resume carefully and retype if necessary; reproduce several copies on white bond paper

    (NOTE: Your resume's physical appearance is VERY IMPORTANT. Avoid using ditto or carbon copies. Be sure to proofread the printer's work. Always bring extra copies to interview. Leave one copy of resume with interviewer and use one as a reference when filling out the application form. You should also mail one resume with your letter of application.)

ASSIGNMENT SHEET #1

SAMPLE RESUME

RESUME
TERRY McKRACKEN

ADDRESS:

Present:	774 E. Adams Street YourTown, YourState 77704 (405) 311-7779	Permanent:	Route #3 AnyTown, YourState 77704 (405) 235-4433

PERSONAL DATA:

Age: 18
Birthdate: Jan. 21, 1964
Height: 5'7"
Weight: 160 lbs.

Health: Excellent
Marital Status: Single
Social Security Number: 447-37-0652

JOB OBJECTIVE:

Parts Counterperson

ULTIMATE GOAL:

Jobber

EDUCATION:

AnyTown High School, AnyTown, YourState 1979-1982

Progress Vo-Tech, Progressville, YourState 1982
Certificate: Parts Specialist, Two semesters
Grade Average: 3.5 on a 4.0 scale

RELATED SUBJECTS STUDIED:

High School	Vo-Tech School
Power Mechanics--2 semesters	Auto Mechanics--2 semesters Parts Specialists--2 semesters

STUDENT ACTIVITIES

President, Senior Class
President, VICA
Treasurer, Youth Fellowship Organization
Point of Purchase Display Contest, 1st Place State, 3rd Place National

ASSIGNMENT SHEET #1

WORK EXPERIENCE:

Name: Farmers Auto Supply
714 E. Maple Ave.
YourTown, YourState 77704
(405) 555-2000

Job Title: Parts Trainee
Dates: June 1, 1981 to Aug. 15, 1981

Supervisor: Mr. John Farmer

Duties: Delivery and Pick-up
Clean up warehouse

Name: U-Save Auto Parts
612 W. Oak
YourTown, YourState 77704
(405) 562-7212

Dates: Aug. 30, 1981 to Present

Supervisor: Mr. Bill Bates

Duties: Shipping and Receiving
Counter work

CHARACTER REFERENCES:

1. Mr. Sammy Davis (918) 555-2552
   Drafting Instructor
   Progress Vo-Tech
   Progressville, YourState 77703

2. Mr. John Hammer (918) 555-3333
   Friend and Neighbor
   772 E. Adams Street
   YourTown, YourState 77703

3. Mrs. Jerri Smith (918) 555-1000
   Youth Director, Parkview Baptist Church
   711 Fellowship Circle
   AnyTown, YourState 77702

WORK REFERENCES:

Mr. Bill Bates (405) 562-7212
Owner
U-Save Auto Parts
612 W. Oak
YourTown, YourState 77704

ORIENTATION
UNIT I

ASSIGNMENT SHEET #2--COMPLETE AN EMPLOYMENT APPLICATION FORM FOR A JOB AS A PARTS SPECIALIST

Complete the following application form using the guidelines below. Use information corresponding to the classified ad and to your personal interview. Use information about yourself from your resume.

(NOTE: Although each business uses its own form, general rules of preparation apply to any form.)

1. Be prepared
    a. Take a good ink pen with you
    b. Take copies of resume
2. Look over entire form before starting to write; do not hurry
3. Follow directions
    a. Note whether information is to be printed or handwritten
    b. Complete all directions
4. Write or print clearly, neatly, and legibly
5. Answer briefly
6. Be honest
7. Answer all questions

    (NOTE: If questions do not apply to you, write Not Applicable or NA in the space to show that you did not overlook the question.)
8. Include complete information; use resume
9. Recheck application when finished
10. Avoid cross-outs and obvious erasure marks
11. Do not list any restrictions to the geographical area in which you would work unless you absolutely will not consider other geographical areas
12. Use the word "open" for questions about minimum salary since most employers pay standardized rates and will not negotiate on this

ASSIGNMENT SHEET #2

"WE ARE AN EQUAL OPPORTUNITY EMPLOYMENT COMPANY. WE ARE DEDICATED TO A POLICY OF NON-DISCRIMINATION IN EMPLOYMENT ON ANY BASIS INCLUDING RACE, CREED, COLOR, AGE, SEX, RELIGION OR NATIONAL ORIGIN OR PHYSICAL DEFECTS."

APPLICATION FOR EMPLOYMENT

PERSONAL INFORMATION

DATE

NAME LAST FIRST MIDDLE

PRESENT ADDRESS STREET CITY STATE ZIP

PERMANENT ADDRESS STREET CITY STATE ZIP

PHONE NO SOCIAL SECURITY NUMBER

REFERRED BY

EMPLOYMENT DESIRED

POSITION DATE YOU CAN START SALARY DESIRED

ARE YOU EMPLOYED NOW? IF SO MAY WE INQUIRE OF YOUR PRESENT EMPLOYER

EVER APPLIED TO THIS COMPANY BEFORE? WHERE WHEN

EDUCATION	NAME AND LOCATION OF SCHOOL	YEARS ATTENDED	DATE GRADUATED	SUBJECTS STUDIED
GRAMMAR SCHOOL				
HIGH SCHOOL				
COLLEGE				
TRADE, BUSINESS, OR CORRESPONDENCE SCHOOL				

SUBJECTS OF SPECIAL STUDY OR RESEARCH WORK

U.S. MILITARY OR NAVAL SERVICE RANK PRESENT MEMBERSHIP IN NATIONAL GUARD OR RESERVES

ACTIVITIES OTHER THAN RELIGIOUS (CIVIC, ATHLETIC, FRATERNAL, ETC.)

Exclude organizations, the name or character of which indicates the race, creed, color, or national origin of its members.

(CONTINUED ON OTHER SIDE)

PS-25

ASSIGNMENT SHEET #2

FORMER EMPLOYERS (LIST BELOW LAST FOUR EMPLOYERS, STARTING WITH LAST ONE FIRST)

DATE MONTH & YEAR	NAME AND ADDRESS OF EMPLOYER	SALARY	POSITION	REASON FOR LEAVING
FROM				
TO				
FROM				
TO				
FROM				
TO				
FROM				
TO				

REFERENCES: Give below the names of two persons not related to you, whom you have known at least one year.

NAME	ADDRESS	BUSINESS	YEARS ACQUAINTED
1			
2			

PHYSICAL RECORD:

List any physical defects

WERE YOU EVER INJURED? GIVE DETAILS

HAVE YOU ANY DEFECTS IN HEARING? IN VISION? IN SPEECH?

IN CASE OF EMERGENCY NOTIFY

NAME ADDRESS PHONE NO.

I AUTHORIZE INVESTIGATION OF ALL STATEMENTS CONTAINED IN THIS APPLICATION. I UNDERSTAND THAT MISREPRESENTATION OR OMISSION OF FACTS CALLED FOR IS CAUSE FOR DISMISSAL. FURTHER, I UNDERSTAND AND AGREE THAT MY EMPLOYMENT IS FOR NO DEFINITE PERIOD AND MAY, REGARDLESS OF THE DATE OF PAYMENT OF MY WAGES AND SALARY, BE TERMINATED AT ANY TIME WITHOUT ANY PREVIOUS NOTICE.

DATE SIGNATURE

DO NOT WRITE BELOW THIS LINE

TO BE COMPLETED DAY EMPLOYMENT BEGINS DATE

HEIGHT WEIGHT AGE DATE OF BIRTH

SINGLE MARRIED WIDOWED CITIZEN U.S.A. SEX

THE ABOVE INFORMATION NEEDED FOR PENSION, HOSPITALIZATION INSURANCE, ETC., AND NOT FOR HIRING PURPOSES

INTERVIEWED BY DATE REMARKS

NEATNESS		CHARACTER	
PERSONALITY		ABILITY	

HIRED FOR DEPT. POSITION WILL REPORT SALARY WAGES

APPROVED 1. 2. 3.

EMPLOYMENT MANAGER DEPT. HEAD GENERAL MANAGER

ORIENTATION
UNIT I

ASSIGNMENT SHEET #3--PRACTICE ANSWERING INTERVIEW QUESTIONS

The following are some questions which might be asked when applying for various jobs. Keep the assignment sheet to review before going on any actual interview.

(NOTE: Questions about your personal life may not legally be asked. In fact, it is illegal for an employer to ask your maiden name or your father's surname if you are a female applicant; your marital status; who lives with you, the church you attend or the name of your spiritual leader; how many children you have, their ages, or who will care for them while you are at work; whether you own or rent your residence; whether you have ever had your wages garnisheed; and whether you have ever been arrested. However, many interviewers, particularly in smaller businesses, may ask such questions. Whether or not you choose to answer the questions depends on how badly you want the job.)

Directions: Answer the following questions as if you were in an actual interview. Why do you think each question might be asked?

1. Where do you go to school? When will you be graduated?
2. Do you (did you) earn any of your own expense money while in school?
3. Why did you leave your previous job(s)?
4. What did you like best and what did you like least about your classes?

   (NOTE: This could be asked about teachers, jobs, or employers.)
5. What books have you read lately? What are your favorite magazines?
6. Are you in good health?
7. What do you expect to be doing five or ten years from now? What is your chosen field of work?
8. At what salary do you expect to start?
9. What are some of your special abilities? What skills do you possess? What tools or equipment can you operate?
10. How would you rate your training for this job? Very good? Fair?
11. What personal characteristics do you think are needed to succeed in your vocation?
12. In what area do you need the most improvement?
13. Do you like to work with other people or do you work best alone?
14. Do you have any questions you want to ask us?
15. Do you think your extracurricular activities were worth the time you devoted to them?
16. How could you contribute to our organization? Why should we hire you?

ASSIGNMENT SHEET #3

17. Tell us about your family and any plans for marriage or further education.

    (NOTE: REMEMBER: Legally, you do not have to answer this question. However, it is a good idea to prepare an answer in case such a question is asked.)

18. For what other jobs have you applied?
19. Do you have any military obligations to fulfill?
20. Give us an example of a project you finished under pressure.
21. May we write or call your last employer?
22. How many people have you supervised at work or through organizations of which you are a member?
23. How do you feel about the progress you have made with your salary?
24. Would you be able to work all day Saturday and Sunday?
25. If you could start school (or work) over again what would you do differently?
26. What is your school attendance record?
27. Have you done the best school work of which you are capable?
28. Do you require attention? Does criticism disturb you?

    (NOTE: These questions are usually asked in a more subtle and indirect way.)

29. What motivates you?
30. Would you be willing to relocate?
31. What size city do you prefer?
32. Have you saved any money?
33. Define cooperation.
34. What job with our company would you choose if you were entirely free to do so?
35. How do you feel about working overtime?
36. Are you willing to take a polygraph test?
37. Are you bondable?

REMEMBER: YOU NEVER GET A SECOND CHANGE TO MAKE A GOOD FIRST IMPRESSION!!! GETTING A JOB IS A JOB!!!

ORIENTATION
UNIT I

NAME ______________________________

TEST

1. Match the terms on the right with their correct definitions.

_____a. The conduct of business affairs in such a manner that the receipt, storage, and marketing of merchandise can be systematically contolled and recorded

_____b. A written request authorizing purchase of specific goods; may be referred to as a purchase order

_____c. An itemized list of goods shipped; usually accompanied with a request for payment

_____d. The freedom of private business to organize and operate for profit with minimum government regulation

_____e. A wholesaler who sells to dealers, garages, and do it yourselfers

1. Invoice
2. Jobber
3. Accountable
4. Free enterprise
5. Requisition

2. Match the responsibilities of a parts specialist on the right with their processes.

_____a. Receives, stores, and issues equipment, materials, supplies, merchandise, or tools in an accountable procedure

_____b. Compiles stock records in a stockroom or warehouse

_____c. Counts, sorts, or weighs incoming articles to verify receipt of items on requisitions or invoices

_____d. Examines stock to verify that it conforms to specifications, and lists shortages

_____e. Places articles in bins, on shelves, or in floor areas according to identifying information such as style, size, or type

_____f. Fills orders or issues supplies from stock; may include inside sales and waiting on customers

_____g. Compiles reports of adjustments of inventory counts and stock records related to stock damaged, shipments refused, and location changes

1. Inspection
2. Inventory control
3. Storage
4. Receiving
5. Unit inventory
6. Recording
7. Counter work

3. List five areas of job opportunities for parts specialists.

   a. ______________________________

   b. ______________________________

   c. ______________________________

   d. ______________________________

   e. ______________________________

4. List four areas of advancement opportunities for parts specialists.

   a. ______________________________

   b. ______________________________

   c. ______________________________

   d. ______________________________

5. Complete the following list of types of salaries available to parts specialists.

   a. Hourly

   b. Weekly

   c. Monthly

   d. ______________________________

   e. ______________________________

6. Select true statements concerning fringe benefits frequently available to parts specialists by placing an "X" in the appropriate blanks.

   _____a. Hospitalization and accident insurance

   _____b. Profit sharing

   _____c. Company car

   _____d. Paid vacation

   _____e. Expense account

7. Complete the following list of working conditions which a parts specialist may expect.

   a. ______________________________

   b. ______________________________

   c. The work is challenging and seldom dull

8. Match the personal attributes of a good employee on the right with their significance.

_____a. This includes taking pride in your work and being willing to do more than your share when needed

_____b. This involves good work habits which include regular attendance and being on time; it also means the ability to understand and follow instructions

_____c. You should always look for unsafe situations that could injure workers or damage property, and you should constantly look for more efficient working practices

_____d. Employees should give truthful information both to customers and to their employer

_____e. Do things on your own initiative; don't wait to be told

_____f. Have a positive attitude and control your temper

_____g. Good employees always look for ways to increase their knowledge; this benefits both the employer and employee

_____h. Be conscious of waste in materials and time

_____i. Follow safety regulations and develop safe working habits; horseplay is not allowed

1. Desire to work
2. Be safety conscious
3. Ability to work with others
4. Enthusiasm and interest
5. Desire to improve one's self
6. Dedication and dependability
7. Put in a day's work for a day's pay
8. Honesty and integrity
9. Alertness, quickness of mind

9. List six steps in preparing for an interview.

a. ______________________________

b. ______________________________

c. ______________________________

d. ______________________________

e. ______________________________

f. ______________________________

10. Arrange in order the steps in meeting a receptionist/secretary by placing the correct sequence number in the appropriate blank.

   _____a. Follow receptionist's instructions

   _____b. Wait patiently

   _____c. Introduce yourself, stating that you have an appointment

   _____d. Smile

11. Complete the following list of positive ways to begin an interview.

   a. Smile and establish eye contact

   b. Listen carefully

   c. Enter with poise

   d. Greet the interviewer by name

   e. Shake hands firmly

   f. Introduce yourself

   g. State purpose of call

   h. Be seated only at interviewer's invitation

   i. Do not show signs of nervousness

   j. ______________________________

   k. ______________________________

   l. ______________________________

12. Select true statements concerning special consideration for answering questions clearly by placing an "X" in the appropriate blanks.

   _____a. Do not interrupt

   _____b. Anticipate questions that might be asked and volunteer proper information

   _____c. Use only yes and no answers when at all possible

   _____d. Criticize former employers or competitors fairly

   _____e. Talk about personal problems; this makes you seem down to earth

   _____f. Answer all questions honestly

   _____g. Give unfavorable answers to unfavorable questions _____h. Find a true, positive statement about your reasons for leaving previous jobs, even if you were fired

_____i. Try to mention your best qualities in relation to something concrete

_____j. Be prepared for personal questions about your home life and parents' occupations

_____k. Avoid questions concerning political, economics, religion, and other controversial subjects

_____l. Answer questions about career objectives using specific terms about what you would like to do in the near future in that particular field without limiting your opportunities

13. List four ways to maintain an interviewer's interest.

a. ____________________

b. ____________________

c. ____________________

d. ____________________

14. Solve the following problem concerning steps in closing an interview:

The interviewer seems suddenly nervous and is shuffling papers and moving around in her chair; this is a sure indication that (the interviewer has not been impressed) (the interview is over).

15. Complete the following list of ways to successfully follow up an interview.

a. ____________________

b. ____________________

c. Make another visit to express interest in the job and to express your appreciation for the opportunity to interview

16. Write a resume.

17. Complete an employment application form for a job as a parts specialist.

18. Practice answering interview questions.

(NOTE: If these activities have not been accomplished prior to the test, ask your instructor when they should be completed.)

ORIENTATION
UNIT I

ANSWERS TO TEST

1. a. 3
   b. 5
   c. 1
   d. 4
   e. 2

2. a. 4
   b. 6
   c. 5
   d. 1
   e. 3
   f. 7
   g. 2

3. Any five of the following:

   a. Jobbers
   b. Automotive dealers
   c. Truck dealers
   d. Mass merchandisers
   e. Implement dealers
   f. Heavy equipment dealers
   g. Marine and small engine dealers

4. Any four of the following:

   a. Shipping and receiving
   b. Delivery
   c. Counter person
   d. Department manager
   e. Purchasing
   f. Store manager
   g. Outside sales
   h. Owner

5. d. Commission
   e. Combination of salary and commission

6. a, b, d

7. a. Comfortable working conditions
   b. The workplace is relatively clean

8. a. 4
   b. 6
   c. 9
   d. 8
   e. 1
   f. 3
   g. 5
   h. 7
   i. 2

9. Any six of the following:
    a. Wear appropriate clothing and shoes
    b. Be well-groomed and neat
    c. Take an ink pen, several copies of your resume, and all information concerning social security number, references, names and addresses, dates employed, and dates you attended school
    d. Go alone; do not take parents or friends
    e. Do not be late
    f. Find out facts about the interviewer ahead of time
        1) Name
        2) Title
    g. Know facts about the business
        1) Name
        2) Kind of business
        3) Products and services
        4) How old the company is and where the plants, offices , or stores are located

10. a. 3
    b. 4
    c. 2
    d. 1

11. j. Do not place personal things on interview's desk
    k. Do not smoke or chew gum
    l. Look alert, interested, and enthusiastic

12. a, b, f, h, i, j, k, l

13. Any four of the following:
    a. Look directly at interviewer
    b. Speak in clear, moderate tones
    c. Use correct English
    d. Show interest in the business; ask questions
    e. Sell yourself
    f. Give the interviewer the opportunity to mention salary and fringe benefits
    g. Act enthusiastically

14. The interview is over

15. a. Write a thank you letter
    b. Make a phone call

16. Evaluated to the satisfaction of the instructor

17. Evaluated to the satisfaction of the instructor

18. Evaluated to the satisfaction of the instructor

HUMAN RELATIONS
UNIT II

UNIT OBJECTIVE

After completion of this unit, the student should be able to select characteristics of a good personality, characteristics of a good fellow worker, reasons why people work, and basic ways for getting along with people. This knowledge will be evidenced by correctly performing the procedures outlined in the assignment sheets and by scoring 85 percent on the unit test.

SPECIFIC OBJECTIVES

After completion of this unit, the student should be able to:

1. Match terms related to human relations with their correct definitions.
2. List four reasons why we study personality.
3. Arrange in order the steps for improving your personality.
4. Select true statements concerning characteristics of a good personality.
5. Select true statements concerning characteristics of a good fellow worker.
6. Match undesirable personality traits with their correct meanings.
7. Select true statements concerning reasons why people work.
8. List three ways people are different.
9. Select true statements concerning basic ways for getting along with people.
10. List four expectations of an employer.
11. Complete a list of expectations of an employee.
12. Answer questions concerning human relations with fellow workers.
13. Rate your grooming and wardrobe habits.
14. Conduct a personality survey of a salesperson at work.

HUMAN RELATIONS
UNIT II

SUGGESTED ACTIVITIES

I. Provide student with objective sheet.

II. Provide student with information and assignment sheets.

III. Discuss unit and specific objectives.

IV. Discuss information and assignment sheets.

V. Have students give personality reports of themselves.

VI. Invite a guest speaker to discuss human relations in business.

VII. Have students prepare stamped, addressed envelopes for use with Assignment Sheet #3, and when evaluating student surveys, remember that the assignment sheet is mostly an exercise in following directions.

VIII. Give test.

INSTRUCTIONAL MATERIALS

I. Included in this unit:

- A. Objective sheet
- B. Information sheet
- C. Assignment sheets
    1. Assignment Sheet #1--Answer Questions Concerning Human Relations With Fellow Workers
    2. Assignment Sheet #2--Rate Your Grooming and Wardrobe Habits
    3. Assignment Sheet #3--Conduct a Personality Survey of a Salesperson at Work
- D. Answers to assignment sheets
- E. Test
- F. Answers to test

II. References:

A. *Human Relations in Business, Student Manual*. Columbus, OH: Agricultural Education Services, Ohio State University, 1971.

B. *An Introduction to Agricultural Business and Industry, Student Manual*. Danville, IL 61832: Interstate Printers, 1971.

C. Hiserodt, Donald D. *Psychology and Human Relations in Marketing*. New York: McGraw-Hill, Inc., 1969.

D. *Job Application*. Columbia, MO 65211: Instuctional Materials Laboratory, University of Missouri, 1973.

HUMAN RELATIONS
UNIT II

INFORMATION SHEET

I. Terms and definitions

   A. Trait--A distinguishing quality or characteristic that contributes to personality

   B. Personality--The sum of all specific traits that are consistently observable in an individual's behavior

   C. Exploit--To make unethical use of another person for one's own advantage

   D. Peer pressure--The psychological need to be accepted by others in one's own age group or by others of one's own social or vocational status

II. Reasons why we study personality

   A. To understand ourselves

   B. To understand others

   C. To better live in our society

   D. To improve our personality

III. Steps for improving your personality

   A. Decide that your personality can be improved

   B. Find out how your personality rates

   C. Analyze this rating trait by trait

   D. Develop a plan of action and self discipline

   E. Work on the plan of action

IV. Characteristics of a good personality

   A. Cheerfulness

   B. Friendliness

   C. Forcefulness

   D. Self-confidence

   E. Tactfulness

INFORMATION SHEET

V. Characteristics of a good fellow worker

   A. Adhering to business rules and policies

   B. Respecting authority

   C. Carrying out assigned responsibilities

   D. Being willing to put forth more than minimal effort

   E. Showing your interest by being bright-eyed and alert

   F. Showing your admiration and appreciation

   G. Making good use of constructive criticism

   H. Contributing new ideas

   I. Being honest

VI. Undesirable personality traits and their meanings

   A. Politicking--Exploiting others for personal gain

   B. Passing the buck--Dodging responsibility or blame by suggesting that persons in higher positions should make a decision or answer for a fault

   C. Apple-polishing--Extending attention or service to one in a higher position with the hope of personal gain

   D. Clique forming--Getting with the "in" crowd because of peer group pressure or for the sake of personal gain

   E. Gossiping--Repeating rumors or distorted information about a person, a situation, or an ethnic group

VII. Reasons why people work

   A. Satisfaction

   B. Ability to support self and family

   C. Acceptance of peers

   D. Power

   E. Wealth

   F. Goal achievement

INFORMATION SHEET

VIII. Ways people are different

- A. Backgrounds
- B. Attitudes
- C. Abilities

  (NOTE: Remember that no two people are alike; each person is an individual.)

IX. Basic ways for getting along with people

- A. Watch what you say; always say less than you think

  (NOTE: How you say it often counts far more than what you say.)

- B. Make promises sparingly and keep them faithfully, no matter what it costs
- C. Never let an opportunity pass to say a kind and encouraging thing to or about somebody

  (NOTE: Praise good work done, regardless of who did it. If criticism is merited, criticize helpfully, never spitefully.)

- D. Be interested in others

  (NOTE: Be interested in their pursuits, their welfare, their homes, and families. Let everyone you meet feel that you regard them as a person of importance.)

- E. Be cheerful

  (NOTE: Keep the corners of your mouth turned up. Hide your pains, worries and disappointments under a pleasant smile. Laugh at good stories and learn to tell them.)

- F. Retain an open mind on all debatable questions

  (NOTE: Discuss but don't argue. It is a mark of superior minds to disagree and yet be friendly.)

- G. Let your virtues speak for themselves, and refuse to talk of another's vices

  (NOTE: Discourage gossip, and make it a rule to say nothing of another unless it is something good.)

- H. Be careful of others' feelings

  (NOTE: Wit and humor at the other fellow's expense are rarely worth the effort, and may hurt where they are least expected.)

INFORMATION SHEET

- I. Pay no attention to ill-natured remarks about you

  (NOTE: Simply live so nobody will believe them.)

- J. Don't be too anxious about getting praise

  (NOTE: Do your work, be patient, keep your disposition honest, forget self, and you will be respected and rewarded.)

X. Expectations of an employer

- A. Loyalty
- B. Proper use of ability and willingness to follow directions
- C. Cooperation
- D. Good working relationships
- E. Good working habits
- F. Honesty

XI. Expectations of an employee

- A. Money
- B. Recognition of accomplishment
- C. Security
- D. Pleasant and safe working conditions

HUMAN RELATIONS
UNIT II

ASSIGNMENT SHEET #1--ANSWER QUESTIONS CONCERNING HUMAN RELATIONS WITH FELLOW WORKERS

Directions: Choose the answer which is MOST correct for each of the following questions. Place your selection in the blank at the left.

_____ 1. Many occupations deal primarily with machines, equipment, or paper work; that is, they deal with things. In business, however, most of the jobs involve close contact with:

a. employers
b. supervisors
c. people
d. other workers

_____ 2. As a group, people are very much:

a. different
b. alike
c. it is difficult to say

_____ 3. It is possible that the things which you enjoy may:

a. appeal to others
b. not appeal to others
c. be distasteful to others
d. all of the above

_____ 4. Which of the following do most people have in common?

a. right to work at a job of their choice
b. desire to get ahead
c. desire to be accepted and approved
d. all of these
e. none of these

_____ 5. The best way to achieve your goals in life is to follow your rights and desires and:

a. also the wish of your boss
b. what your parents say
c. the Golden Rule
d. just what you feel like doing

_____ 6. Do the best work you can for the important jobs and:

a. don't worry about the little jobs
b. let others do the little jobs
c. also do the most routine jobs well
d. everything else will take care of itself

ASSIGNMENT SHEET #1

______ 7. Plus doing the best work you can, it is important to:

a. learn as much as you can about your company
b. see what you can get on your boss
c. keep up on the latest gossip
d. be seen and not heard

______ 8. The right to think and act as individuals ______________ normally shared by most.

a. is not
b. may be
c. is

______ 9. The statement that "retailing is people" is:

a. not true
b. only part true
c. all true

______ 10. Which of the following is not a desirable trait of an employee?

a. sense of humor
b. tact
c. indifference
d. initiative

______ 11. Exploiting others toward our own efforts is:

a. desirable
b. OK if you can get away with it
c. undesirable
d. not too bad

______ 12. When you are criticized by your superior, it is best to:

a. act indifferent
b. tell him/her to do it himself/herself
c. take it constructively
d. shrug it off

______ 13. Loyalty includes:

a. working hours only
b. both the time to and from work
c. all the time
d. just when you feel like it

______ 14. To approach your job with enthusiasm, it is necessary to:

a. fool the boss
b. impress your co-workers
c. be glad to be part of the team

ASSIGNMENT SHEET #1

_____15. It is not necessary to be friendly as long as you:

a. do your job
b. act as though you are
c. get to work on time
d. none of these

_____16. When you have a question, it is best to:

a. do the job the way you think it should be done
b. wait and ask it later
c. not bother your boss with it
d. ask it when it needs to be asked

_____17. When you have joined a clique, you have:

a. picked sides
b. helped yourself
c. joined the "in" group
d. become a member of the team

_____18. A good way to get along in your new job is to:

a. be a "know-it-all"
b. be willing to learn
c. show your co-workers how smart you are
d. run to your boss with every question you have

_____19. Showing that you are not afraid of work means to:

a. work as hard as you can
b. be willing to tackle any job assigned
c. work harder than any of your co-workers

_____20. The need to show appreciation to fellow workers:

a. will get you nowhere
b. is strongest when you are new
c. isn't really necessary at all
d. is just on the surface

_____21. You should start calling your co-workers by their:

a. first names as soon as possible
b. nicknames to show you are really in
c. last name only
d. proper names until you have been around awhile or are told differently

_____22. If you do all of the things we have suggested you will have:

a. everyone liking you
b. a few friends
c. a better chance of being well-liked
d. the reputation for being an apple-polisher

ASSIGNMENT SHEET #1

_____23. The people you can learn the most from are:

a. always your bosses
b. your best buddies
c. those who show an interest in you
d. the ones you eat lunch with

_____24. Human behavior is usually:

a. pretty easy to understand
b. not too predictable
c. easy to predict
d. none of your business

_____25. The total morale of your business is:

a. beyond your control
b. a matter for the boss
c. each employee's problem
d. unimportant

HUMAN RELATIONS
UNIT II

ASSIGNMENT SHEET #2--RATE YOUR GROOMING AND WARDROBE HABITS

Directions: Rate yourself on each of the following questions. Use the scale of 6--Always, 4--Usually, 2--Occasionally, and 0--Never. When a question refers specifically to the opposite sex, place N/A (Not Applicable) in the blank and score it as 6. When you have completed the evaluation, total your score and compare to the rating scale provided.

QUESTIONS	RATING
1. Do you take a bath or shower daily?	______
2. Do you use an effective deodorant or antiperspirant daily?	______
3. Do you shave as often as needed?	______
4. Do you clean your face thoroughly at least twice a day (more often if you have oily skin)?	______
5. Do you completely remove makeup before bedtime?	______
6. Do you check fingernails daily and repair or clean as necessary?	______
7. Do you wash hair twice weekly (more often if needed)?	______
8. Do you have hair cut or trimmed regularly?	______
9. Do you use a dandruff shampoo and/or creme rinses and conditioners if needed?	______
10. Do you brush your teeth at least twice daily?	______
11. Do you use a mouthwash daily?	______
12. Do you make the daily effort to apply makeup so that it looks fresh and natural?	______
13. Do you get enough sleep and rest so that you feel refreshed?	______
14. Do you put on clean hosiery and undergarments daily?	______
15. Are your clothes clean and pressed?	______
16. Do your clothes coordinate attractively?	______
17. Do you check garments for split seams, ripped hems, or loose buttons before wearing?	______

ASSIGNMENT SHEET #2

QUESTIONS	RATING
18. Do you take a good look at yourself in a full-length mirror before leaving the house?	____
19. Do you take a few minutes during the day to freshen your makeup and comb your hair?	____
TOTAL	____

Rating

100 - 114	Great, you take pride in your appearance
85 - 99	Good, you'd probably pass inspection
70 - 84	Fair, you're not really trying
Less than 70	Poor, your best friend won't even tell you

HUMAN RELATIONS
UNIT II

ASSIGNMENT SHEET #3--CONDUCT A PERSONALITY SURVEY OF A SALESPERSON AT WORK

Directions: Visit a store for the purpose of making a personal purchase or to observe someone else making a purchase and rate the personality of the salesperson involved; fill out the first three lines of the survey before entering the store, but in order to remain inconspicuous, it will be necessary to read the survey form carefully, make mental notes during the purchase or observation, and record your findings immediately afterward. Once the survey is completed, mail or take it immediately to your instructor.

SALESPERSON PERSONALITY SURVEY

Your name ______________________ Date ______________

Store name ___________________ Address ________________

Time of day __________ Weather Conditions ________________

Nature of purchase or observation ____________________________

____

Which characteristic of a good personality did the salesperson best exhibit; cheerfulness, friendliness, forcefulness, self-confidence, or tactfulness? (If none, write none)

____

Did the salesperson exhibit bodily movements, mannerisms, or facial expressions that helped make the customer feel at ease? (Explain your answer)

____

____

On a scale of 1 to 10, rate the salesperson's grooming and dress.
Rating (circle one): 1 2 3 4 5 6 7 8 9 10

What particular items contributed to or detracted from the salesperson's grooming and dress?

____

____

Did the salesperson maintain eye contact with the customer? ______________

Did the salesperson suggest that the customer might need additional items? __________

ASSIGNMENT SHEET #3

Indicate whether the transaction was cash, charge, check, or credit card, and state specifically how the salesperson handled this part of the transaction, for instance, did the salesperson leave the customer's bill on the counter while clearly counting out change, or did the salesperson exhibit comfortable knowledge of the credit card machine or check cashing procedure? ____________________

____

What were the salesperson's final words to the customer? ____________________

____

State in your own words how you feel the personality of the salesperson reflects the personality of the store in general.

____

____

For what reason do you think the customer shopped at that particular store?
(Circle one): Low prices
Sale prices
Convenience
Quality products and service
Highly advertised store
Good reputation of store

Do you think the time of day or the weather conditions had anything to do with the personality displayed by the salesperson or maybe affected the customer in any way? (If your answer is "yes", explain.)

____

On a scale of 1 to 10, rate the salesperson's total effectiveness.
Rating (circle one): 1 2 3 4 5 6 7 8 9 10

Would the information you have gathered in this survey be of any value to the salesperson's superior? (Explain your answer) ____________________

____

Whom did you most feel like while you were conducting this survey?
(Circle one): The boss
A professional evaluator
An interested learner
An inexperienced observer

Your signature ____________________

Approximate time and date your survey was mailed back to your instructor.

Date ____________________ Approximate time ____________________

HUMAN RELATIONS
UNIT II

ANSWERS TO ASSIGNMENT SHEETS

Assignment Sheet #1

A good discussion is more important than 100 on the quiz.

1. d There is contact with all of these groups but the *close* contact is with other workers
2. b This is a generalization but all people like to be treated with respect, considered important, treated fairly; there are many individual differences within the group
3. d All three of these apply--it could be any of these
4. d
5. c Do unto others as you would have them do unto you
6. c
7. a
8. c
9. b. To be successful, the employee needs to know about the products, services, etc.
10. c
11. c Explain what exploiting means
12. c
13. c
14. c
15. d
16. d
17. a
18. b
19. b
20. b
21. d This is part of respect
22. c
23. c
24. a
25. c

Assignment Sheet #2--Confidential information to be retained by student; evaluation should be only on classroom discussion

Assignment Sheet #3--To be evaluated as mostly an exercise in following directions and to inspire classroom discussion

HUMAN RELATIONS
UNIT II

NAME ______________________________

TEST

1. Match the terms on the right with their correct definitions.

______a. A distinguishing quality or characteristic that contributes to personality

______b. The sum of all specific traits that are consistently observable in an individual's behavior

______c. To make unethical use of another person for one's own advantage

______d. The psychological need to be accepted by others in one's own age group or by others in one's own social or vocational status

1. Exploit
2. Peer pressure
3. Personality
4. Trait

2. List four reasons why we study personality.

a. ______________________________

b. ______________________________

c. ______________________________

d. ______________________________

3. Arrange in order the steps for improving your personality by placing the correct sequence number in the appropriate blank.

______a. Analyze this rating trait by trait

______b. Decide that your personality can be improved

______c. Work on the plan of action

______d. Find out how your personality rates

______e. Develop a plan of action and self discipline

4. Select true statements concerning characteristics of a good personality by placing an "X" in the appropriate blanks.

______a. Cheerfulness

______b. Spitefulness

______c. Self-confidence

______d. Tactfulness

______e. Egotism

______f. Forcefulness

5. Select true statements concerning characteristics of a good fellow worker by placing an "X" in the appropriate blanks.

______a. Carrying out assigned responsibilities

______b. Criticizing company policy

______c. Doing only the work assigned to you

______d. Contributing new ideas

______e. Adhering to business rules and policies

______f. Respecting authority

______g. Being critical of new ideas

6. Match undesirable personality traits on the right with their correct meanings.

______a. Exploiting others for personal gain

______b. Dodging responsibility or blame by suggesting that persons in higher positions should make a decision or answer for a fault

______c. Extending attention or service to one in a higher position with the hope of personal gain

______d. Getting with the "in" crowd because of peer group pressure or for the sake of personal gain

______e. Repeating rumors or distorted information about a person, a situation, or an ethnic group

1. Clique forming
2. Politicking
3. Gossiping
4. Passing the buck
5. Apple polishing

7. Select true statements concerning reasons why people work by placing an "X" in the appropriate blanks.

______a. Ability to support self and family

______b. Goal achievement

______c. Need for quality schools

______d. Acceptance of peers

______e. Decrease welfare rolls

8. List three ways people are different.

   a. ____

   b. ____

   c. ____

9. Select true statements concerning basic ways for getting along with people by placing an "X" in the appropriate blanks.

   ______a. Be cheerful

   ______b. Complain often

   ______c. Talk about co-workers behind their backs

   ______d. Retain an open mind on all debatable questions

   ______e. Be careful of others' feelings

   ______f. Voice your opinions often

   ______g. Be interested in others

10. List four expectations of an employer.

    a. ____

    b. ____

    c. ____

    d. ____

11. Complete the following list of expectations of an employee.

    a. ____

    b. Recognition of accomplishment

    c. Security

    d. ____

12. Answer questions concerning human relations with fellow workers.

13. Rate your grooming and wardrobe habits.

14. Conduct a personality survey of a salesperson at work.

    (NOTE: If these activities have not been accomplished prior to the test, ask your instructor when they should be completed.)

HUMAN RELATIONS
UNIT II

ANSWERS TO TEST

1. a. 4
   b. 3
   c. 1
   d. 2

2. a. To understand ourselves
   b. To understand others
   c. To better live in our society
   d. To improve our personality

3. a. 3
   b. 1
   c. 5
   d. 2
   e. 4

4. a, c, d, f

5. a, d, e, f

6. a. 2 d. 1
   b. 4 e. 3
   c. 5

7. a, b, d

8. a. Background
   b. Attitudes
   c. Abilities

9. a, d, e, g

10. Any four of the following:
    a. Loyalty
    b. Proper use of ability and willingness to follow directions
    c. Cooperation
    d. Good working relationships
    e. Good working habits
    f. Honesty

11. a. Money
    d. Pleasant and safe working conditions

12. Evaluated to the satisfaction of the instructor

13. Evaluated to the satisfaction of the instructor

14. Evaluated to the satisfaction of the instructor

COMMUNICATIONS
UNIT III

UNIT OBJECTIVE

After completion of this unit, the student should be able to list factors necessary for effective communication and ways to achieve it, and select ways to carry on a casual conversation. The student should also be able to select true statements concerning communicating product information and proper telephone use. This knowledge will be evidenced by correctly performing the procedures outlined in the assignment sheets and by scoring 85 percent on the unit test.

SPECIFIC OBJECTIVES

After completion of this unit, the student should be able to:

1. Match terms related to communications with their correct definitions.
2. Select factors necessary for effective communication.
3. List five ways to achieve effective communication.
4. Select true statements concerning the proper way to introduce yourself.
5. Select ways to get more out of casual conversations.
6. List four factors necessary for communicating product information.
7. Complete a list of general rules for proper telephone use.
8. Arrange in order the steps in handling interruptions with telephone customers.
9. List five items of information needed to complete a telephone order.
10. Complete a list detailing the correct method for leaving a telephone unattended.
11. Complete a list of ways to use the telephone as a sales and advertising tool.
12. Select true statements concerning other tips for intelligent telephone use.
13. Pronounce words distinctly.
14. Use proper English.
15. Analyze voice qualities.

COMMUNICATIONS
UNIT III

SUGGESTED ACTIVITIES

I. Provide student with objective sheet.

II. Provide student with information and assignment sheets.

III. Make transparencies.

IV. Discuss unit and specific objectives.

V. Discuss information and assignment sheets.

VI. Provide recorder for voice analysis.

VII. Request teletrainer from telephone company.

VIII. Role play introductions.

IX. Give test.

INSTRUCTIONAL MATERIALS

I. Included in this unit:

  A. Objective sheet

  B. Information sheet

  C. Transparency masters

    1. TM 1--Feedback

    2. TM 2--Leaving Telephone Unattended

  D. Assignment sheets

    1. Assignment Sheet #1--Pronounce Words Distinctly

    2. Assignment Sheet #2--Use Proper English

    3. Assignment Sheet #3--Analyze Voice Qualities

  E. Answers to assignment sheets

  F. Test

  G. Answers to test

II. References:

A. Roan, Anthony J. *Training and Communication*. part five. International Textbook Co., 1968.

B. Rowe, Kenneth L., and Jimerson, Hallie C. *Communications in Marketing*. Dallas, TX: Gregg Division/McGraw-Hill Book Co., 1971.

C. *Win More Friends by Telephone*. American Telephone and Telegraph Co., 1962.

D. Buchanan, Robert D. "Communicating With Employees," *Food Service Marketing*. 37 (Sept., 1975).

COMMUNICATIONS
UNIT III

INFORMATION SHEET

I. Terms and definitions

A. Communication--All the ways by which meaning is conveyed from one person to another

B. Feedback--Returning to the beginning source; finding out how one did

C. Empathy--Putting self in other person's position; participating in another person's feelings or ideas

D. Trade association journals--Publications printed by various nonprofit organizations to disseminate information about an industry

(NOTE: There are over 12,000 trade associations in the United States.)

E. House magazine--Magazine produced by a company to build morale among the employees

(NOTE: House magazines may feature articles on safety, public service projects, retirements, promotions, company policies, winners of sales contests, new store openings, and editorials.)

F. Bulletin board--Place where written notices and reminders may be seen easily

G. Memo--Written announcement sent to members of an organization

H. Grapevine--Informal communication system that exists in all organizations; may be helpful or harmful depending on how it is used

II. Factors necessary for effective communication

A. Feedback (Transparency 1)

B. Trust in the person sending the message

(NOTE: Real communication cannot take place if the person receiving the message feels threatened by the message or does not have confidence in the sender.)

C. Empathy

(NOTE: Most people have a tendency to judge a message from their own viewpoints.)

D. Listening

(NOTE: Don't get so involved in thinking about your reply that you miss or confuse information; get the complete information first, then quickly organize your thoughts and make your reply.)

INFORMATION SHEET

E. Proper timing

(NOTE: Conversation cannot take place if the listener is interrupted, has his/her mind on other things, or if there is much interference in the background.)

III. Ways to achieve effective communication

A. Encourage questions and participation

B. Use examples to illustrate main ideas

C. Use the kind of language the listener will understand

(NOTE: Simple words are usually best; but if you talk down to a person, he/she will resent it; if you talk over a person's head, he/she becomes uncomfortable and suspicious.)

D. Respect the listener

E. Get to the point; do not talk too much

F. State clearly why orders are given or why certain standards or results are expected

G. Pay attention

H. Make allowances for those who may have something worthwhile to say but who lack the ability or experience to express themselves well

IV. Proper way to introduce yourself

A. Introduce yourself promptly

B. Give first and last names

C. State names slowly and distinctly

D. Complete introduction by giving some information about yourself so new acquaintances may talk easily with you and remember you

Examples: "I'm Joe Smith, a Parts Specialist from Lincoln High School"

"I'm Sam Wilson from the hardware department, and I've been assigned to work in this section this afternoon."

E. Repeat names during the introduction and conversation so they may be remembered correctly

V. Ways to get more out of casual conversations

A. Ask questions to discover the other person's interests

Examples: Sports, family, job

INFORMATION SHEET

B. Avoid controversial subjects such as religion and politics

C. Avoid repeating annoying words and phrases

Examples: "And, uh . . ." and "You know"

D. Do not monopolize the conversation

(NOTE: A rule of thumb is not to talk more than one minute without giving someone else an opportunity to participate.)

E. Be a good listener and people will think you are a great conversationalist

F. Do not call an older person by his/her first name unless he/she gives permission

(NOTE: "Sir" may be substituted for a man's name, but "ma'am" may not be properly substituted for a woman's name in some parts of the country.)

G. Follow single word answers like "yes" and "no" with the person's name and a simple statement to make the reply sound friendly

H. Say friendly phrases, such as "Good Morning," automatically

(NOTE: Such phrases, whether or not an answer is given, are appropriate in business.)

I. Avoid using your hands too much while talking

VI. Factors necessary for communicating product information

A. Avoid meaningless, trite phrases

(NOTE: Do not assume everyone understands common words; be as specific as possible.)

Examples: Great, fine, nice, bad, cheap

B. Avoid slang

Examples: Honey, dearie

C. Pronounce words distinctly

Examples: Wasjuhavimmind? (What did you have in mind?)
Weryasit? (Where is it?)

D. Be sure terms are interpreted the same way by both the salesperson and the customer

Examples: Satisfaction guaranteed, clearance, a brand name, best buy

E. Use proper English

INFORMATION SHEET

VII. General rules for proper telephone use

(NOTE: Remember when you are on a business telephone, you represent the entire business.)

A. Answer promptly

B. When calling, allow the telephone to ring ten times or for one minute before hanging up

C. Use a pleasant voice

1. Visualize the person on the other end of the line

2. Smile while you talk

(NOTE: Smiling will cause your voice to sound friendlier and less flat.)

D. Identify yourself

Examples: "Joe's Auto Supply, Debbie Smith"
"Ajax Supply, This is John"

E. Do not say "speaking" after your name because what is said last will be what the other party hears best

(NOTE: At home say only "Hello" or "Smith's residence" and be cautious about giving personal information to strangers.)

F. Use the customer's name often

G. Speak distinctly into the receiver

(NOTE: A telephone is made to pick up a normal pitch at about an inch from the mouth.)

H. Do not ask who is calling unless it is company policy

VIII. Steps in handling interruptions with telephone customers

A. Ask "Will you hold or shall I call you back?" when you must leave the line to get information

B. Check back frequently to assure the customer he/she has not been forgotten if it becomes necessary to leave the telephone for long periods of time

C. Attract attention before resuming the call

Example: "Mrs. Jones? Thank you for waiting."

D. Apologize for errors or delays

INFORMATION SHEET

IX. Items of information needed to complete a telephone order

   A. Name and address of the customer

      (NOTE: When possible, put the customer's order directly onto the invoice that will be used for billing; this can save much time, especially on long orders.)

   B. Exact description of the item wanted

   C. Quantity desired

   D. Date and time of delivery

   E. Billing instructions

      (NOTE: Be sure to confirm the price of each item. If it is to be a charge sale, the customer should give a purchase order number which the salesperson should verify before releasing the order. If the customer has any questions that the salesperson cannot answer, the salesperson should obtain the information immediately or else offer to call the customer back with the information.)

X. Correct method for leaving a telephone unattended (Transparency 2)

   (NOTE: A telephone receiver will pick up sound for 10 to 12 feet.)

   A. Press the hold button to cut out noisy distractions

   B. Lay the receiver flat if the telephone does not have a hold button

   C. Lay the receiver against the side of a wall telephone

XI. Ways to use telephone as a sales and advertising tool

   A. Many parts stores advertise in the yellow pages; some stores advertise exclusively in the yellow pages

   B. Special company services and open hours are important advertising elements and every counterperson should be familiar with them

      Example: All foreign and domestic parts
      PROMPT FREE LOCAL DELIVERY
      Open Mon-Sat 9-6
      Open Sun-Noon-6

      (NOTE: Free local delivery probably accounts for many sales for the company in the preceding example, and for people who work 8-5, knowing that the store is open after 5 and on weekends becomes significant information.)

   C. When a phone number is listed in yellow pages advertising, do not tie that line up with outgoing calls

INFORMATION SHEET

D. Stay informed about all company advertising and use the telephone to suggest related parts or tools for advertised specials

XII. Other tips for intelligent telephone use

A. Write down points to be covered and questions to be asked before placing a call, especially a long distance call

B. State, "This is long distance," as soon as the party answers

(NOTE: Consequently, the party who answers should not keep you waiting for a long period.)

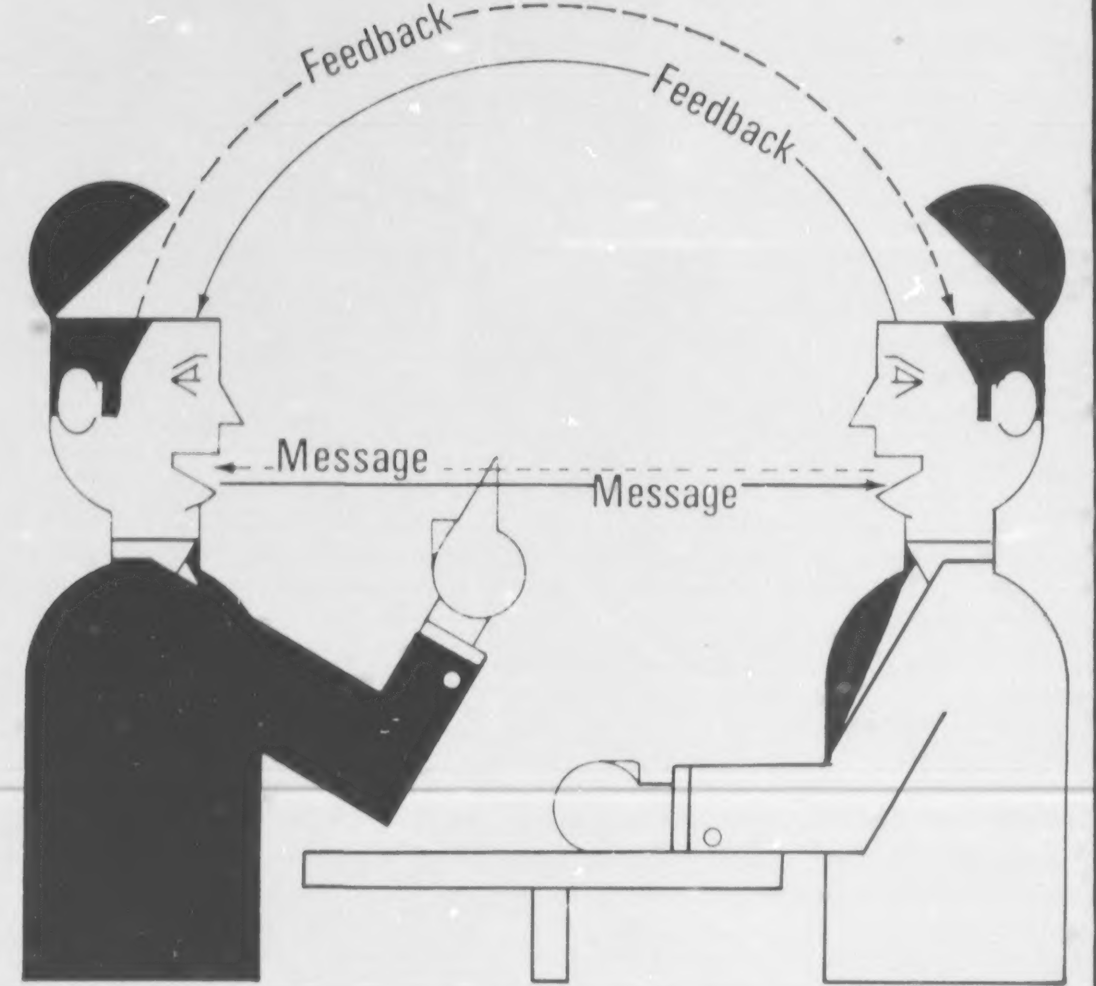
C. Replace the telephone receiver easily

(NOTE: The person making the call should hang up first.)

D. Have emergency and frequently called phone numbers near the phone

(NOTE: Many stores call their frequent and best customers prior to making a delivery run; this courtesy often brings additional sales and saves a lot of money on single-item deliveries.)

Feedback


Feedback
Feedback
Message
Message

TM

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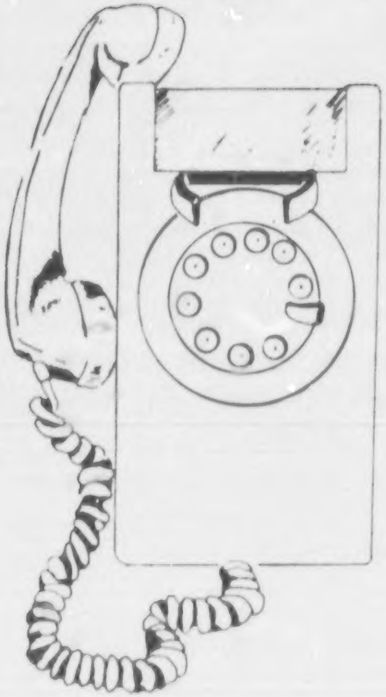
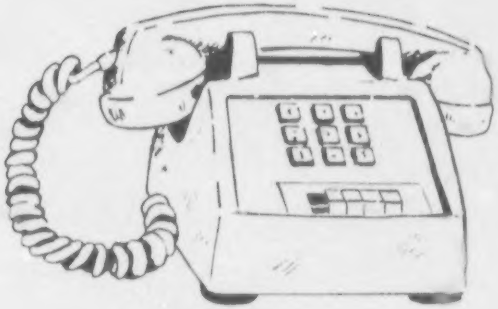
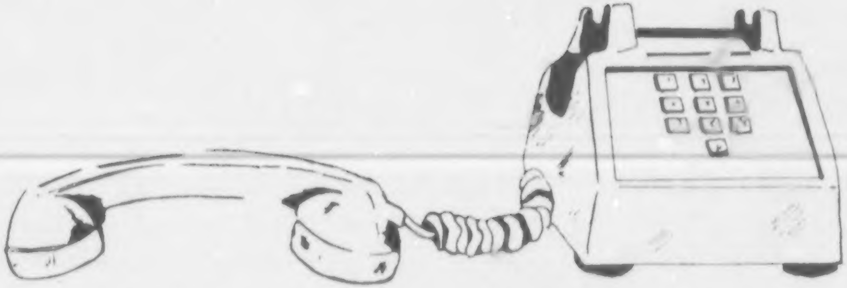
Leaving Telephone Unattended



Lay Receiver Against Side
of Wall Telephone



Press Hold Button



Lay Receiver Flat

COMMUNICATIONS
UNIT III

ASSIGNMENT SHEET #1--PRONOUNCE WORDS DISTINCTLY

1. Translate into writing the following words and phrases.
   a. Wuryagoin?
   b. Dya wanna go?
   c. Cher turn tucall, Margrut.
   d. Wy dincha stoppim?
   e. Watchagonnado nex Winsdy?
   f. Ohuhdunno.
   g. Wenzee cumin?
2. Read the following tongue twisters aloud. Be careful not to omit any necessary vowel or consonant sounds.
   a. Strict strong Stephen Stringer snared slickly six silly snakes.
   b. Tie the twine to three tree twigs.
   c. With which winsome witch were you whispering?
   d. A snifter of snuff is not enough snuff for the snuff snifter to sniff.
   e. Slippery sleds slide swiftly down slick streets.
   f. Thomas Tattertoot took tough twine to tie ten twigs to two tall tree trunks.
   g. What whim led Whitney White to whittle, whisper, and whimper near the wharf where a whale might wheel and whirl?
3. Translate into writing the following words.
   a. Dese
   b. Dose
   c. Wen
   d. Budder
   e. Thoid
   f. Ti-ip
   g. Warsh
   h. Git

ASSIGNMENT SHEET #1

4. Read the following words aloud. Be careful not to omit any necessary vowel or consonant sounds.

   a. Bringing

   b. Picture

   c. Candidate

   d. Laboratory

   e. Midst

   f. Route

   g. Window

   h. Creek

5. Rewrite the following sentences using correct English.

   a. Bill said, "I wanna sell three washing machines today."

   b. The salesperson said, "I'm gonna check to see if we can have that delivered or not."

   c. "She coulda done that yesterday."

   d. "Commere. I need your help," said the department head.

   e. "Will you gimme a hand?"

   f. "I dunno if we have any pullover sweaters."

   g. "Hooja say you want to see?"

   h. "Woncha come back again?"

COMMUNICATIONS
UNIT III

ASSIGNMENT SHEET #2--USE PROPER ENGLISH

1. Circle the correct word.
    - a. The students have (hanged, hung) the merchandise in the display from the ceiling.
    - b. I have (saw, seen) the security person catch a shoplifter many times.
    - c. Everyone (is, are) ready to go.
    - d. I am positive it was (they, them) who did it.
    - e. Barbara, Jan, and (he, him) will be working tomorrow.
    - f. You and (I, me) can sell all of these items quickly.
2. Write the following sentences correctly.
    - a. She don't got any.
    - b. We ain't got any.
    - c. I seen them take the items.
    - d. She done that Saturday.
    - e. See them tickets over there?
    - f. I rung the wrong total on the cash register.

COMMUNICATIONS
UNIT III

ASSIGNMENT SHEET #3--ANALYZE VOICE QUALITIES

Do a tape recording of your voice. Then, listen to the tape and complete the rating which follows. Using the rating of your voice on tape, prepare a list of ways in which you can improve your voice. Complete the list on a separate piece of paper.

Have your classmates rate your voice, too. Check back periodically to see if there has been any noticeable progress.

VOICE RATING

When the answer to any of the following questions is "yes," put down a minus four. If it is "maybe" or "sometimes," put down a minus two. If it is "no," put down zero. Of course, the lower the numerical score the fewer voice faults you have. A score of 0 to -10 is excellent; -10 to -20 is good; -20 to -30 is fair; and -30 and below is unsatisfactory.

	Answer			Score
	Yes	Maybe/Sometimes	No	
1. Do you speak too loudly or in a noisy manner?				
2. Do people frequently ask you to repeat a statement you have made?				
3. Do you speak in the same tone continually?				
4. Do you speak with the same volume continually?				
5. Do you speak in an artificial, unnatural, and affected voice?				
6. Is your voice high pitched and shrill?				
7. Do you frequently speak with lungs almost empty?				
8. Do you speak in long sentences which frequently lose their meaning?				
9. Do you hiss when using certain letters? (P, B, T, C, S)				

ASSIGNMENT SHEET #3

	Answer			Score
	Yes	Maybe/Sometimes	No	
10. Do you speak in mush tones as though you had something in your mouth?				
11. Do you use "uh" and "er-uh" frequently?				
12. Is your voice clouded and husky?				
13. Do you talk "through your nose"?				
14. Do you talk in a jerky manner?				
15. Do you talk in a whining and apologetic manner?				
16. Do you talk in a dominating, dictatorial tone?				
17. Do you stammer and stutter?				
18. Do you often speak too fast or in a slow drawl?				
19. Do you mispronounce words frequently?				
20. Does your voice lose its force and expression at the end of sentences?				
21. Do you speak in a flat, dull and colorless tone?				
22. Do you jumble up consonants, which make your speech hard to understand?				
23. Do you use a "gushy" or "gooey" voice when talking to friends?				
24. Do you choke off vowel sounds?				
25. Is your voice unpleasant when you laugh?				
26. Do you put the "d," "t," and "ing" on the end of words?				
27. Do you run words together?				

ASSIGNMENT SHEET #3

	Answer			Score
	Yes	Maybe/Sometimes	No	
28. Do you use colloquialisms or speak with an accent?				
29. Do you have an adequate vocabulary?				
30. Do your words flow out evenly and clearly?				
31. Is your voice friendly and cordial?				
32. Can you be heard clearly in the back of the room when speaking?				
33. Do you emphasize your main thought?				

COMMUNICATIONS
UNIT III

ANSWERS TO ASSIGNMENT SHEETS

Assignment Sheet #1

1. a. Where are your going?
   b. Do you want to go?
   c. It is your turn to call, Margaret.
   d. Why didn't you stop him?
   e. What are you going to do next Wednesday?
   f. Oh, I don't know.
   g. When is he coming?

3. a. These
   b. Those
   c. When
   d. Butter
   e. Third
   g. Wash
   h. Get

5. (NOTE: The following answers are corrected parts of each sentence.)

   a. I want to
   b. I'm going to check
   c. She could have
   d. Come here
   e. Give me
   f. I don't know
   g. Who did you say
   h. Won't you

Assignment Sheet #2

1. a. Hung
   b Seen
   c. Is
   d. They
   e. He
   f. I

2. a. She does not have any.
   b. We do not have any.
   c. I saw them take the items.
   d. She did that Saturday.
   e. See those tickets over there?
   f. I rang the wrong total on the cash register.

COMMUNICATIONS
UNIT III

NAME ______________________________

TEST

1. Match the terms on the right with their correct definitions.

_____a. Putting self in other person's position; participating in another person's feelings or ideas

_____b. All the ways by which meaning is conveyed from one person to another

_____c. Returning to the beginning source; finding out how one did

_____d. Informal communication system that exists in all organizations; may be helpful or harmful depending on how it is used

_____e. Written announcement sent to members of an organization

_____f. Place where written notices and reminders may be seen easily

_____g. Magazine produced by a company to build morale among the employees

_____h. Publications printed by various nonprofit organizations to disseminate information about an industry

1. Communication
2. Empathy
3. Feedback
4. Trade association journals
5. House magazine
6. Bulletin board
7. Memo
8. Grapevine

2. Select from the list below those factors necessary for effective communication by placing an "X" in the correct blanks.

_____a. Impressing the listener

_____b. Feedback

_____c. Trust in the person sending the message

_____d. Use of big words

_____e. Saying only "yes" and "no" unless necessary to say more

_____f. Listening

_____g. Interrupting

_____h. Proper timing

_____i. Empathy

3. List five ways to achieve effective communication.

a. ______________________________

b. ______________________________

c. ______________________________

d. ______________________________

e. ______________________________

4. Select true statements concerning the proper way to introduce yourself by placing an "X" in the appropriate blanks.

______a. Introduce yourself promptly

______b. Give first and last names

______c. State names slowly and distinctly

______d. Complete introduction by giving some information about yourself so new acquaintances may talk easily with you and remember you

______e. Do not repeat names during an introductory conversation; this will conserve valuable time

5. Select from the following list ways to get more out of casual conversations by placing an "X" in the correct blanks.

______a. Ask questions to discover the other person's interests

______b. Talk about yourself a lot

______c. Avoid controversial subjects such as religion and politics

______d. Talk about your latest achievement

______e. Do not monopolize the conversation

______f. Be a good listener and people will think you are a great conversationalist

______g. Discuss controversial subjects

______h. Call all people by their first name

______i. Say friendly phrases, such as "Good Morning," automatically

______j. Follow single word answers like "yes" and "no" with the person's name and a simple statement to make the reply sound friendly and not curt

6. List four factors necessary for communicating product information.

   a. ______________________________

   b. ______________________________

   c. ______________________________

   d. ______________________________

7. Complete the following list of general rules for proper telephone use.

   a. ______________________________

   b. When calling, allow the telephone to ring ten times or for one minute before hanging up

   c. Use a pleasant voice

      1) Visualize the person on the other end of the line

      2) Smile while you talk

   d. ______________________________

   e. Do not say "speaking" after your name because what is said last will be what the other party hears best

   f. Use the customer's name often

   g. Speak directly into the receiver

   h. Do not ask who is calling unless it is company policy

8. Arrange in order the steps in handling interruptions with telephone customers by placing the correct sequence number in the appropriate blank.

   ______a. Apologize for errors or delays

   ______b. Attract attention before resuming the call

   ______c. Ask "Will you hold or shall I call you back?" when you must leave the line to get information

   ______d. Check back frequently to assure the customer he/she has not been forgotten if it becomes necessary to leave the telephone for long periods of time

9. List five items of information needed to complete a telephone order.

   a. ______________________________

   b. ______________________________

   c. ______________________________

   d. ______________________________

   e. ______________________________

10. Complete the following list detailing the correct method for leaving a telephone unattended.

    a. ____________________

    b. Lay the receiver flat if the telephone does not have a hold button

    c. Lay the receiver against the side of a wall telephone

11. Complete the following list of ways to use the telephone as a sales and advertising tool.

    a. Many parts stores advertise in the yellow pages; some stores advertise exclusively in the yellow pages

    b. Special company services and open hours are important advertising elements and every counterperson should be familiar with them

    c. ____________________

    d. ____________________

12. Select true statements concerning other tips for intelligent telephone use by placing an "X" in the appropriate blanks.

    _____a. Do not waste time making notes before you place your call; once you get to talking you'll remember everything easily

    _____b. Do not waste time telling someone you're calling long distance; people can usually distinguish a long distance call from a local call

    _____c. Replace the telephone receiver so that it makes enough noise to let the other party know the conversation is over

    _____d. Keep emergency and frequently called numbers in a desk drawer so they won't get lost

13. Pronounce words distinctly.

14. Use proper English.

15. Analyze voice qualities.

    (NOTE: If these activities have not been accomplished prior to the test, ask your instructor when they should be completed.)

COMMUNICATIONS
UNIT III

ANSWERS TO TEST

1. a. 2 d. 8 g. 5
   b. 1 e. 7 h. 4
   c. 3 f. 6

2. b, c, f, h, i

3. Any five of the following:

   a. Encourage questions and participation
   b. Use examples to illustrate main ideas
   c. Use the kind of language the listener will understand
   d. Respect the listener
   e. Get to the point; do not talk too much
   f. State clearly why orders are given or why certain standards or results are expected
   g. Pay attention
   h. Make allowances for those who may have something worthwhile to say but who lack the ability or experience to express themselves well

4. a, b, c, d

5. a, c, e, f, i, j

6. Any four of the following:

   a. Avoid meaningless, trite phrases
   b. Avoid slang
   c. Pronounce words distinctly
   d. Be sure terms are interpreted the same way by both the salesperson and the customer
   e. Use proper English

7. a. Answer promptly
   d. Identify yourself

8. a. 4
   b. 3
   c. 1
   d. 2

9. a. Name and address of customer
   b. Exact description of the item wanted
   c. Quantity desired
   d. Date and time of delivery
   e. Billing instructions

10. a. Press the hold button to cut out noisy distractions

11. c. When a phone number is listed in the yellow pages, do not tie that line up with outgoing calls

    d. Stay informed about all company advertising and use the telephone to suggest related parts or tools for advertised specials

12. None of the statements are true

13. Evaluated to the satisfaction of the instructor

14. Evaluated to the satisfaction of the instructor

15. Evaluated to the satisfaction of the instructor

SAFETY
UNIT IV

UNIT OBJECTIVE

After completion of this unit, the student should be able to list rules for general store safety, relate fire extinguishers to the classes of fires they are designed to extinguish, and list items concerning safe working practices with batteries. The student should also be able to discuss housekeeping rules and complete an individual student safety inspection. This knowledge will be evidenced by correctly performing the procedures outlined in the assignment sheet and by scoring 100 percent on the unit test.

SPECIFIC OBJECTIVES

After completion of this unit, the student should be able to:

1. Match terms related to safety with their correct definitions.
2. List five rules for personal safety.
3. Select true statements concerning rules for general store safety.
4. Match classes of fires with their correct definitions.
5. Match types of fire extinguishers with the classes of fires they are designed to extinguish.
6. Select true statements concerning OSHA regulations for battery safety.
7. Complete a list of general rules for battery safety.
8. Match potential battery hazards with ways to avoid them.
9. List two personal safety rules for working with batteries.
10. Solve a problem concerning first aid procedures for personal acid splashes.
11. Solve a problem concerning emergency procedure for acid spills on floors and machinery.
12. Complete a list of safety rules concerning flammable liquids.
13. List five housekeeping rules for warehouses and stockrooms.
14. Select true statements concerning housekeeping procedures for counter and display areas.
15. Complete the individual student safety inspection.

SAFETY
UNIT IV

SUGGESTED ACTIVITIES

I. Provide student with objective sheet.

II. Provide student with information and assignment sheets.

III. Make transparencies.

IV. Discuss unit and specific objectives.

V. Discuss information and assignment sheets.

VI. Show a film which deals with the importance of safety.

VII. Invite the local fire marshal to give a talk on fire safety.

VIII. Demonstrate proper use of fire extinguishers.

IX. Impress upon the class that checking electrolyte and load testing batteries are two counter services that parts specialists perform often, and that learning and remembering rules about battery safety are especially important.

X. Demonstrate methods for safe lifting and have students practice lifting various heavier objects.

XI. Give test.

INSTRUCTIONAL MATERIALS

I. Included in this unit:

   A. Objective sheet

   B. Information sheet

   C. Transparency masters

      1. TM 1--How to Lift Safely

      2. TM 2--Types of Fire Extinguishers

      3. TM 3--Proper Use of Portable Fire Extinguishers

      4. TM 4--Good Housekeeping

      5. TM 5--Good Housekeeping (Continued)

D. Assignment Sheet #1--Individual Student Safety Inspection

E. Test

F. Answers to test

II. References:

A. *Kidde Portable Extinguishers, The ABC's of Fire Protection.* Belleville, NJ: Walter Kidde & Co., Inc., 1978.

B. *Automotive Wholesaler Counterman's Handbook.* Chicago, IL: Automotive Service Industry Association, 1977.

C. Films:

1. "Housekeeping Means Safekeeping," #146-009
   Journal Films Inc.
   930 Pinter Avenue
   Evanston, ILL 60202

2. "Stop a Fire Before it Starts," #145-024
   Journal Films Inc.
   909 West Diversey Parkway
   Chicago, ILL 60614

SAFETY
UNIT IV

INFORMATION SHEET

I. Terms and definitions

   A. Safety--State or condition of being safe; freedom from danger, risk, or injury

   B. Accident--Any suddenly occurring, unintentional event which causes injury or property damage

   C. First aid--Immediate, temporary care given the victim of an accident or sudden illness until the services of a physician can be obtained

   D. OSHA--Occupational Safety and Health Act; federal legislation designed to insure safe and sanitary working conditions for employees

II. Rules for personal safety

   A. Wear clothing appropriate for the work being performed

   B. Confine long hair before operating equipment

   C. Wear safety glasses when operating equipment

   D. Remove ties and secure loose clothing when working around machine tools or rotating equipment

   E. Conduct yourself in a manner conducive to safe store practices

   F. Use soap and water frequently as a method of preventing skin diseases

   G. Observe smoking regulations

III. Rules for general store safety

   A. Move heavy objects only with proper equipment or additional help

   B. Retain all guards and safety devices on power equipment

   C. Report defective tools, machines, or other equipment to the manager

   D. Report all accidents to the manager regardless of the nature or severity

   E. Pick up trash from aisles and place it in a proper trash container

   F. Use parts transporting carts and handtrucks properly and safely

   G. Remove all grease and oil from floor or aisles

   H. Use ladders or stepstools to reach upper shelves

   I. Know location of fire fighting equipment and first aid station

INFORMATION SHEET

J. Lift heavy objects with your legs, not your back (Transparency 1)

K. Make sure objects do not protrude out of bins or shelves

L. Keep floors in display areas clean and free of debris

IV. Classes of fires and their definitions

A. Class A--Fires that occur in ordinary combustible materials such as wood, rags, and rubbish

B. Class B--Fires that occur with flammable liquids such as gasoline, oil, grease, paint, and thinners

C. Class C--Fires that occur in or near electrical equipment such as motors, switchboards, and electrical wiring

D. Class D--Fires that occur with combustible metals such as magnesium

V. Types of fire extinguishers and classes of fires they are designed to extinguish (Transparencies 2 and 3)

A. Pressurized water--Used on class A fires

B. Soda acid--Used on class A fires

C. Foam--Used on class A and B fires

D. Carbon dioxide (CO_2)--Used on class B and C fires

E. Dry chemical--Used on class B,C, and D fires

(NOTE: On class D fires, dry sand is as effective as any dry chemical other than Purple X; the cost of Purple X chemical places it out of reach of most shops.)

VI. OSHA regulations for battery safety

A. Deluge showers and eye baths should be provided adjacent to the battery charging area

B. Batteries should be stored and charged only in well-ventilated areas; do not breathe fumes from a battery

C. All sources of ignition should be remote from the battery charging or storage area; there must be no smoking, no lighted matches or lighters, and no sparking from tools

VII. General rules for battery safety

A. Handle batteries and battery acid with care

B. Transport a battery safely with a battery carrier

INFORMATION SHEET

C. Avoid overfilling a battery, especially if it is soon to be charged

D. Do not work on batteries during discharge or charge

E. Avoid spilling electrolyte and rinse hydrometer after use

(NOTE: Parts specialists often have to check electrolyte and load test batteries; in fact, in "Counter Services," UNIT XI, there are job sheets on these two items, and your instructor may choose to have you review safety items in this unit or answer a pop quiz about battery safety prior to performing the job sheets in UNIT XI.)

VIII. Potential battery hazards and ways to avoid them

A. Rotating parts of machinery--*Always disconnect the ground cable* of the battery before working on rotating parts of a vehicle

B. Battery charger--Must be connected or disconnected only when the charger is turned off and unplugged, and the cell covers are in place

C. Battery testing--Always use the proper instruments; do not short across the battery terminals because the resulting spark could cause an explosion

D. Jumping a battery--Never jump a frozen battery or a battery low on water

E. Fumes from battery acid--Never stand with your face directly over a charging battery; the fumes are toxic, and an explosion could spray acid into your face

F. Battery clamp removal and installation--When removing a battery, *disconnect the grounded clamp first*; when installing a battery, connect the grounded clamp last

G. Vent caps--If these have been removed, they should be replaced before moving a battery

IX. Personal safety rules for working with batteries

A. Always wear eye protection; splash-proof goggles are recommended

B. Protect your face, hands, and clothing with a face shield, gloves, and a protective apron

C. Do not wear metal jewelry (rings, ID bracelets) when working around batteries

X. First aid procedures for personal acid splashes

A. Immediately wash any part of the body or clothing that comes into contact with acid

B. Use generous amounts of water on any skin areas where acid has splashed

INFORMATION SHEET

C. When acid gets into eyes, flush the eyes immediately with generous amounts of water or eye solution and see a doctor as soon as possible

D. If acid is acidentally ingested, drink plenty of water or milk and follow that with milk of magnesia, beaten egg, or vegetable oil, and see a doctor as soon as possible

XI. Emergency procedures for acid spills on floors and equipment

(CAUTION: Even though an acid spill may not immediately affect a person, the fumes are potentially explosive, and the acid will quickly eat away floor coverings and paint if not neutralized.)

A. Neutralize the spill with a weak ammonia solution

B. Neutralize the spill with a bicarbonate of soda solution

C. Neutralize the spill by immediately flushing the area with generous amounts of water

XII. Safety rules concerning flammable liquids

A. Store paints and thinners in approved areas

B. Learn location and use of fire extinguishers for flammable liquid fires

C. Store all flammable liquids in approved safety containers

D. Observe smoking regulations in stockroom or warehouse

E. Keep flammable liquids storage area clear of trash or rags

F. Periodically check electrical connections in storage area

XIII. Housekeeping procedures for warehouses and stockrooms (Transparencies 4 and 5)

A. Dust shelves, bins, and stock items at regular intervals

B. Wipe any grease or oil from floors, bins, or shelves

C. Keep floors and aisles clear of trash or any obstacles that could create a tripping hazard

D. Do not sweep trash into a pile; put it in a proper trash container

E. Place unsold or new merchandise onto the correct shelf or into the correct bin, and inspect all stock items at regular intervals to make sure they are correctly placed

F. Sweep floors and aisles at regular intervals

G. Always return brooms and other cleanup equipment to a proper storage area

INFORMATION SHEET

XIV. Housekeeping procedures for counter and display areas (Transparencies 4 and 5)

A. Keep windows clean inside and out

B. Dust and straighten displays regularly

C. Keep window and counter merchandise neat and clean

D. Inspect, clean, and straighten undercounter items daily

E. Keep counter supplies and counter literature neat and orderly

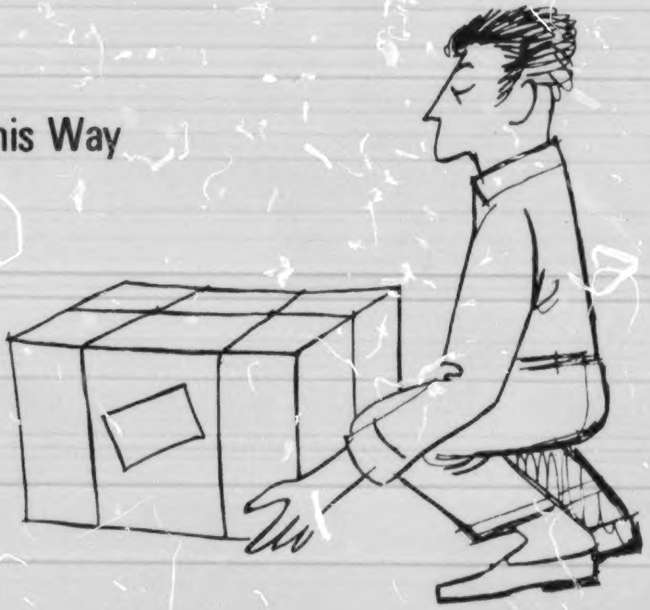
F. Return unsold parts to stock room

G. Sweep and mop floor daily

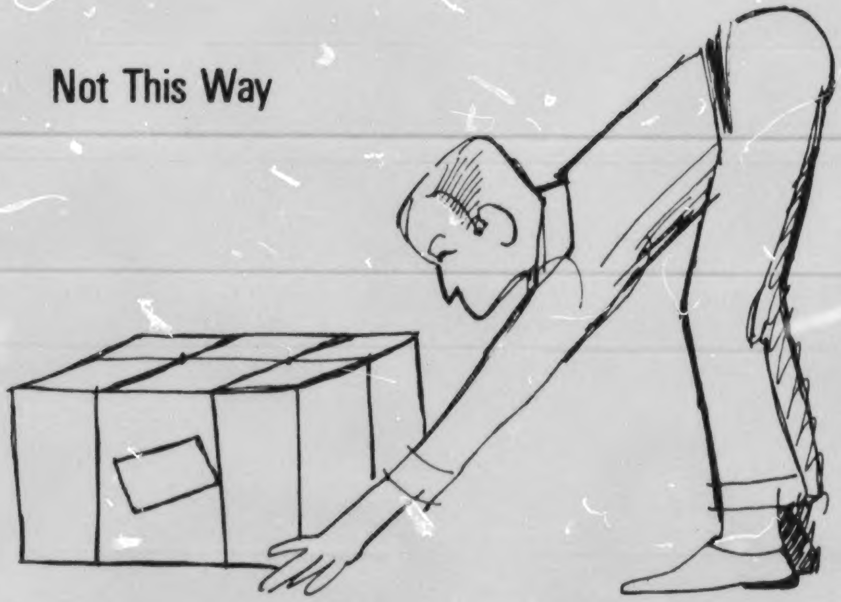
H. Place all trash in a proper trash container

I. Always return brooms and other cleanup equipment to a proper storage area

How to Lift Safely

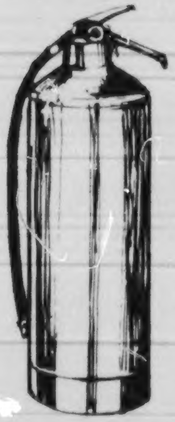


This Way

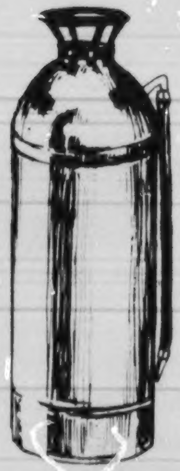


Not This Way

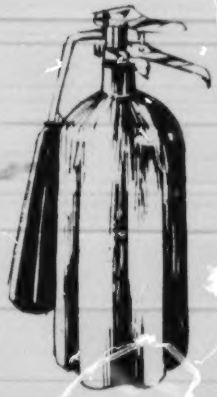
Types of Fire Extinguishers



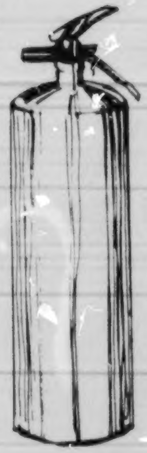
Pressurized
Water



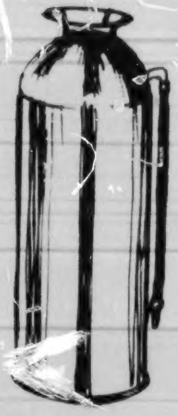
Soda-Acid



Carbon
Dioxide



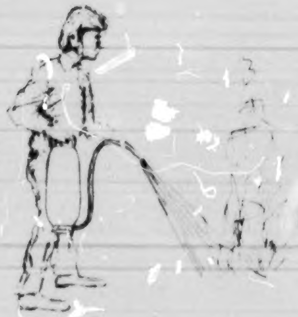
Dry
Chemical



Foam

11

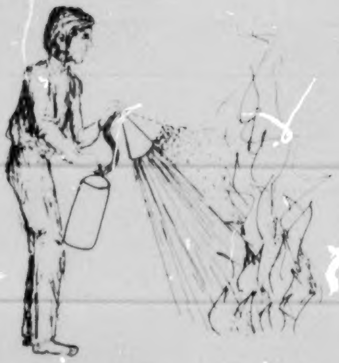
Proper Use of Portable Fire Extinguishers



Class A Fires

Use Soda Acid

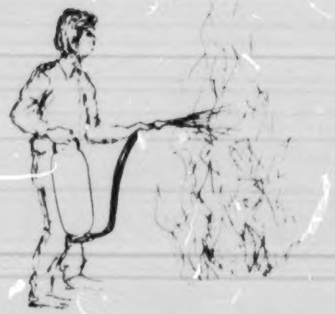
Direct Stream at
Base of Fire



Class B and C Fires

Use Carbon Dioxide

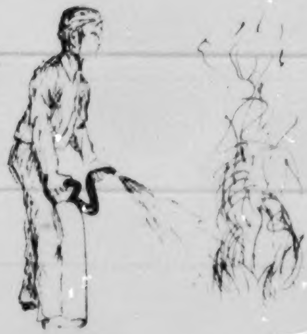
Direct Discharge at
Base of Fire and
Gradually Move Forward
and Upward



Class A and B Fires

Use Foam

Direct Stream so
That Foam Falls
Lightly Onto the
Fire; Do not Direct
Stream Directly Into the Fire

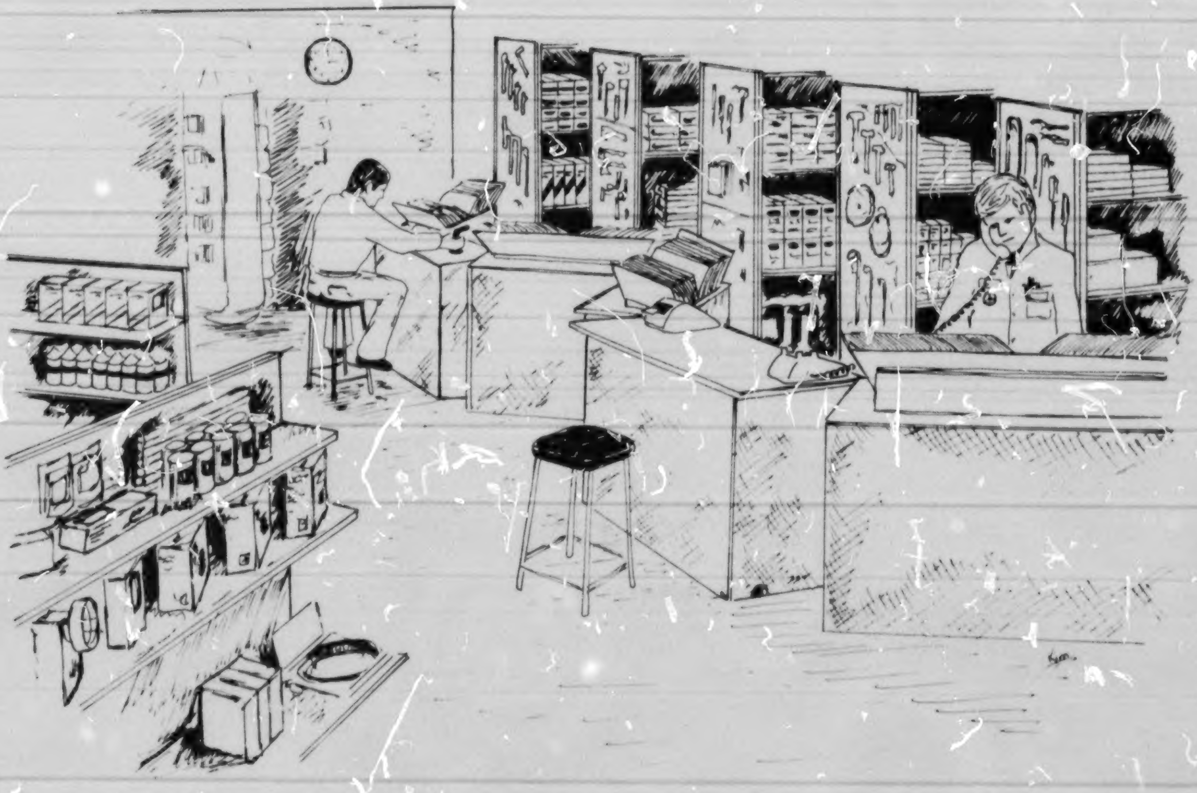


Class A Fires

Use Pressurized Water

Place Foot on Pedal
Activator and Direct
1 Stream at Base of Flames

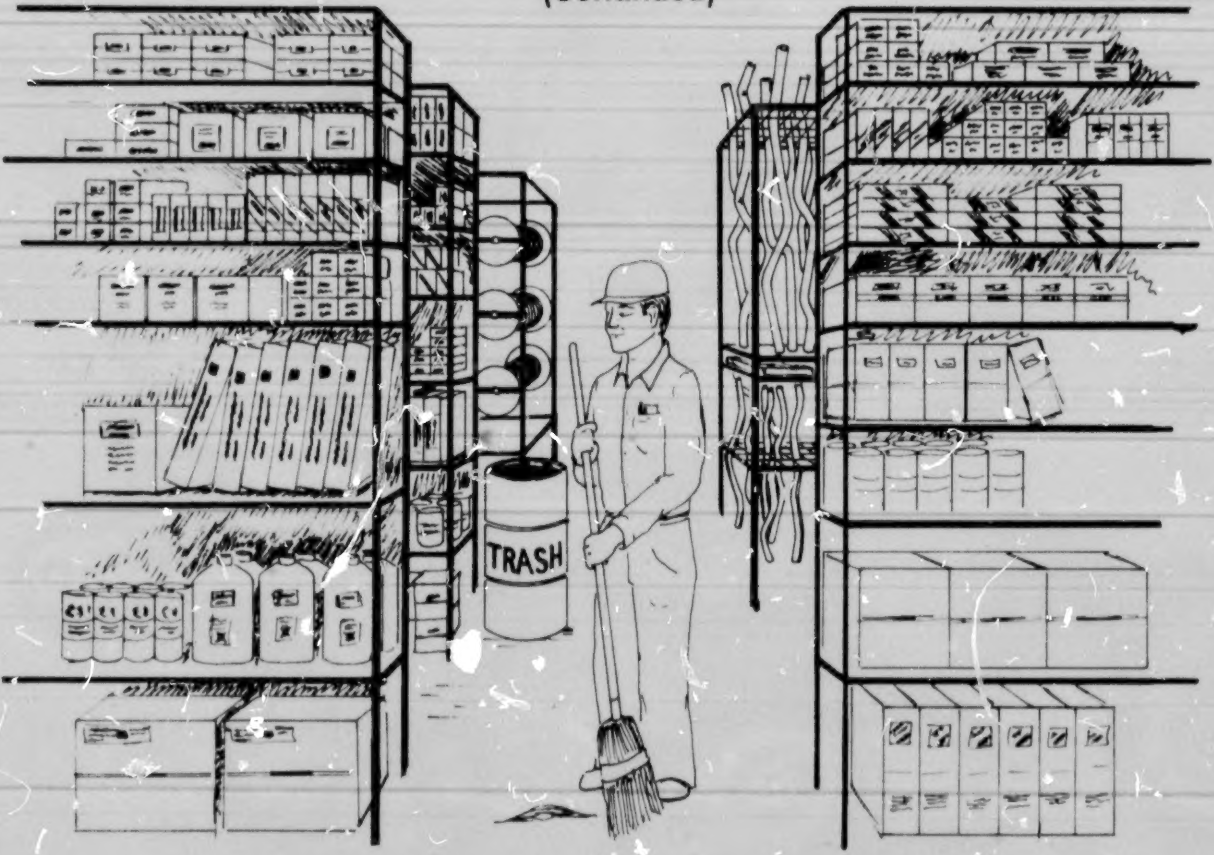
Good Housekeeping



Good Housekeeping and Properly Displayed Merchandise Attracts Customers

Good Housekeeping

(Continued)



Good Housekeeping and Properly Stored Merchandise Keeps Customers

SAFETY
UNIT IV

ASSIGNMENT SHEET #1--COMPLETE THE INDIVIDUAL STUDENT SAFETY INSPECTION

Directions: Make a field trip to a parts store or use a facility selected by your instructor to conduct a safety inspection; circle the appropriate letter according to the following evaluation code:

S--Satisfactory (needs no attention)
A--Acceptable (needs some attention)
U--Unsatisfactory (needs immediate attention)

Recommendations should be made in all cases where a "U" is circled. Space is provided at the end of the form for such comments.

GENERAL PHYSICAL CONDITION

1. Machines, bins, and other equipment are arranged so as to conform to good safety practices S A U
2. Condition of stairways and ramps S A U
3. Condition of aisles S A U
4. Condition of floors S A U
5. Condition of walls, windows, and ceiling S A U
6. Illumination is safe, sufficient, and well placed S A U
7. Ventilation is adequate and proper for conditions S A U
8. Temperature control S A U
9. Fire extinguishers are of proper type, adequately supplied, properly located, and maintained S A U
10. Teacher and pupils know location of and how to use proper type of extinguisher for various fires S A U
11. Number and location of exits is adequate and properly identified S A U

ASSIGNMENT SHEET #1

12.	Walls are clear of objects that might fall	S	A	U
13	Utility lines are properly identified	S	A	U
14.	Evaluation of the total rating of GENERAL PHYSICAL CONDITION	S	A	U

HOUSEKEEPING

1.	General appearance as to orderliness	S	A	U
2.	Adequate and proper storage space for tools and materials	S	A	U
3.	Corners are clean and clear	S	A	U
4.	Special tool rack in orderly condition	S	A	U
5.	Supply and/or material room is orderly	S	A	U
6.	Sufficient scrap boxes are provided	S	A	U
7.	Scrap stock is put in scrap boxes promptly	S	A	U
8.	Materials are stored in an orderly and safe condition	S	A	U
9.	A spring lid metal container is provided for waste and oily rags	S	A	U
10.	Dangerous materials are stored in metal cabinets	S	A	U
11.	Machines have been safety color coded	S	A	U
12.	Safety cans are provided for flammable liquids	S	A	U
13.	Floors are free of oil, water and foreign material	S	A	U
14.	Evaluation of the total rating for HOUSEKEEPING	S	A	U

ASSIGNMENT SHEET #1

EQUIPMENT

1. Machines are arranged so that workers are protected from hazards of other machines and passing students S A U
2. Danger zones are properly indicated and guarded S A U
3. All gears and moving belts are protected by permanent enclosure guards S A U
4. All equipment control switches are easily available to operator S A U
5. Nonskid areas are provided around machines S A U
6. Tools are kept sharp, clean, and in safe working order S A U
7. Evaluation of the total rating for EQUIPMENT S A U

ELECTRICAL INSTALLATION

1. All switches are enclosed S A U
2. There is a master control switch for all of the electrical installations S A U
3. All electrical extension cords are in safe condition and are not carrying excessive loads S A U
4. All machine switches are within easy reach of the operators S A U
5. Individual cut-off switches are provided for each machine S A U
6. No temporary wiring in evidence S A U
7. Evaluation of the total rating for ELECTRICAL INSTALLATION S A U

RECOMMENDATIONS:

SAFETY
UNIT IV

NAME ____________________________

TEST

1. Match the terms on the right with their correct definitions.

_____a. State or condition of being safe; freedom from danger, risk, or injury

_____b. Any suddenly occurring, unintentional event which causes injury or property damage

_____c. Immediate, temporary care given the victim of an accident or sudden illness until the services of a physician can be obtained

_____d. Occupational Safety and Health Act; federal legislation designed to insure safe and sanitary working conditions for employees

1. OSHA
2. First aid
3. Safety
4. Accident

2. List five rules for personal safety.

a. ____

b. ____

c. ____

d. ____

e. ____

3. Select true statements concerning rules for general store safety by placing an "X" in the appropriate blanks.

_____a. Move heavy objects as best you can

_____b. Retain all guards and safety devices on power equipment

_____c. Leave defective tools or equipment in a place where someone else can find them and report them to the manager

_____d. Report only severe accidents to the manager

_____e. Pick up trash from aisles and place it in a proper trash container

_____f. Use parts transporting carts and handtrucks properly and safely

_____g. Throw a little sawdust on grease and oil spots on floors and in aisles

_____h. Use ladders or step stools to reach upper shelves ______i. Know location of fire fighting equipment and first aid station

______j. Lift heavy objects with your back and arm muscles, not your leg muscles

______k. Make sure objects do not protrude from bins or shelves

______l. Keep floors in display areas clean and free of debris

4. Match the classes of fires on the right with their correct definitions.

______a. Fires that occur with flammable liquids such as gasoline, oil, grease, paint and thinners

______b. Fires that occur in ordinary combustible materials such as wood, rags, and rubbish

______c. Fires that occur in or near electrical equipment such as motors, switchboards, and electrical wiring

______d. Fires that occur with combustible metals such as magnesium

1. Class A
2. Class B
3. Class C
4. Class D

5. Match the types of fire extinguishers on the right with the class or classes of fire each is designed to extinguish.

______a. Used on class A and B fires

______b. Used on class A fires

______c. Used on class B and C fires

______d. Used on class B, C, and D fires

1. Pressurized water
2. Soda acid
3. Foam
4. Carbon dioxide
5. Dry chemical

6. Select true statements concerning OSHA regulations for battery safety by placing an "X" in the appropriate blanks.

______a. Deluge showers and eye baths should be provided adjacent to the battery charging area

______b. Batteries should be stored and charged only in well-ventilated areas; do not breath fumes from a battery

______c. All sources of ignition should be remote from the battery charging or storage area; there must be no smoking, no lighted matches or lighters, and no sparking from tools

7. Complete the following list of general rules for battery safety.

a. ______________________________

b. ______________________________

c. Avoid overfilling a battery, especially if it is soon to be charged

d. Do not work on batteries during discharge or charge

e. Avoid spilling electrolyte and rinse hydrometer after use

8. Match the potential battery hazards on the right with ways to avoid them.

______a. Always disconnect the ground cable of the battery before working on rotating parts of a vehicle

______b. Must be connected or disconnected only when the charger is turned off and unplugged, and the cell covers are in place

______c. Always use the proper instruments; do not short across the battery terminals because the resulting spark could cause an explosion

______d. Never jump a frozen battery or a battery low on water

______e. Never stand with your face directly over a charging battery; the fumes are toxic, and an explosion could spray acid into your face

______f. When removing a battery, disconnect the grounded clamp first; when installing a battery, connect the grounded clamp last

______g. If these have been removed, they should be replaced before moving a battery

1. Battery testing
2. Battery clamp removal and installation
3. Rotating parts of machinery
4. Vent caps
5. Battery charger
6. Fumes from battery acid
7. Jumping a battery

9. List two personal safety rules for working with batteries.

a. ____

b. ____

10. Solve the following problem concerning first aid procedures for personal acid splashes by answering the following question:

An employee has just suffered an acid splash and complains that the acid is burning her eyes; what is the recommended first aid procedure?

____

11. Solve the following problem concerning emergency procedures for acid spills on floors and equipment by answering the following question:

Acid has just spilled onto a tile-covered floor and there is no ammonia solution or bicarbonate of soda solution available to neutralize it; what is the recommended emergency procedure?

____

12. Complete the following list of safety rules concerning flammable liquids.

    a. ______________________________

    b. ______________________________

    c. Store all flammable liquids in approved safety containers

    d. Observe smoking regulations in stockroom or warehouse

    e. Keep flammable liquids storage area clear of trash or rags

    f. Periodically check electrical connections in storage area

13. List five housekeeping procedures for warehouses and stockrooms.

    a. ______________________________

    b. ______________________________

    c. ______________________________

    d. ______________________________

    e. ______________________________

14. Select true statements concerning housekeeping procedures for counter and display areas by placing an "X" in the appropriate blanks.

    _____a. Keep windows clean inside and out

    _____b. Dust and straighten displays regularly

    _____c. Keep window and counter merchandise neat and clean

    _____d. Inspect, clean, and straighten undercounter items daily

    _____e. Keep counter supplies and counter literature neat and orderly

    _____f. Return unsold parts to stock room

    _____g. Sweep and mop floor daily

    _____h. Place all trash in a proper trash container

    _____i. Always return brooms and other cleanup equipment to a proper storage area

15. Complete the individual student safety inspection.

    (NOTE: If this activity has not been accomplished prior to the test, ask your instructor when it should be completed.)

SAFETY
UNIT IV

ANSWERS TO TEST

1. a. 3
   b. 4
   c. 2
   d. 1

2. Any five of the following:
   a. Wear clothing appropriate for the work being performed
   b. Confine long hair before operating equipment
   c. Wear safety glasses when operating equipment
   d. Remove ties and secure loose clothing when working around machine tools or rotating equipment
   e. Conduct yourself in a manner conducive to safe store practices
   f. Use soap and water frequently as a method of preventing skin diseases
   g. Observe smoking regulations

3. b, e, f, h, i, k, l

4. a. 2
   b. 1
   c. 3
   d. 4

5. a. 3
   b. 1 and 2
   c. 4
   d. 5

6. a, b, c

7. a. Handle batteries and battery acid with care
   b. Transport a battery safely with a battery carrier

8. a. 3
   b. 5
   c. 1
   d. 7
   e. 6
   f. 2
   g. 4

9. Any two of the following:
   a. Always wear eye protection; splash-proof goggles are recommended
   b. Protect your face, hands, and clothing with a face shield, gloves, and a protective apron
   c. Do not wear metal jewelry when working around batteries

10. Flush the eyes immediately with generous amounts of water or eye solution and see a doctor as soon as possible

11. Flush the area with generous amounts of water

12. a. Store paints and thinners in approved areas
    b. Learn location and use of fire extinguishers for flammable liquid fires

13. Any five of the following:
    a. Dust shelves, bins, and stock items at regular intervals
    b. Wipe any grease or oil from floors, bins, or shelves
    c. Keep floors and aisles clear of trash or any obstacles that could create a tripping hazard
    d. Do not sweep trash into a pile; put it in a proper trash container
    e. Place unsold or new merchandise onto the correct shelf or into the correct bin, and inspect all stock items at regular intervals to make sure they are correctly placed
    f. Sweep floors and aisles at regular intervals
    g. Always return brooms and other cleanup equipment to a proper storage area

14. a, b, c, d, e, f, g, h, i

15. Evaluated to the satisfaction of the instructor

PARTS AND SYSTEMS IDENTIFICATION
UNIT V

UNIT OBJECTIVE

After completion of this unit, the student should be able to identify the basic components of various automotive systems and solve problems relating system parts to practical applications. This knowledge will be evidenced by correctly performing the procedures outlined in the assignment sheets and by scoring 85 percent on the unit test.

SPECIFIC OBJECTIVES

After completion of this unit, the student should be able to:

1. Match basic systems of an automobile with their correct definitions.
2. Identify the basic components of an automobile engine.
3. Identify the basic components of a fuel system.
4. Identify the basic components of a cooling system.
5. Identify the basic components of a heating system.
6. Identify the basic components of an air conditioning system.
7. Identify the basic components of a conventional ignition system.
8. Identify the basic components of an electronic ignition system.
9. Identify the basic components of a starting system.
10. Identify the basic components of a charging system.
11. Identify the basic components of an exhaust system.
12. Identify the basic components of an emission control system.
13. Identify the basic components of a drive train.
14. Identify the basic components of a front suspension system.
15. Identify the basic components of a MacPherson strut suspension system.
16. Identify the basic components of a conventional steering system.
17. Identify the basic components of a power steering system.
18. Identify the basic components of a rack and pinion steering system.

19. Identify the basic components of a disc brake system.
20. Identify the basic components of a body system.
21. Match basic systems with tools and supplies needed to repair them.
22. Solve problems concerning basic engine service needs.
23. Solve problems concerning basic cylinder head and valve service.
24. Solve problems concerning basic ring and bearing service.
25. Solve problems concerning additional basic engine services.
26. Solve problems concerning basic fuel system services.
27. Solve problems concerning basic carburetor and pump services.
28. Solve problems concerning basic cooling system service.
29. Solve problems concerning basic ignition system services.
30. Solve problems concerning electrical system services.
31. Solve problems concerning basic exhaust and emission system services.
32. Solve problems concerning basic drive train system services.
33. Solve problems concerning basic suspension and steering system services.
34. Solve problems concerning basic braking system services.
35. Solve problems concerning basic body system parts and supplies.

PARTS AND SYSTEMS IDENTIFICATION
UNIT V

SUGGESTED ACTIVITIES

I. Provide student with objective sheet.

II. Provide student with information and assignment sheets.

III. Make transparencies.

IV. Discuss unit and specific objectives.

V. Discuss information sheet.

VI. Discuss assignment sheets and make sure every student is prepared with appropriate materials from the *Automotive Wholesaler Counterman's Handbook*; all assignment sheets are correlated with ASIA guidelines, and the assignment sheets will be ineffective without the appropriate ASIA materials.

(NOTE: The *Counterman's Handbook* is available at appealing price discounts for orders of five or more; orders should be directed to: Automotive Service Industry Association, 444 North Michigan Avenue, Chicago, IL 60611. If further ordering information is required, the Secretary of the ASIA Education and Training Committee may be reached at telephone number 312-836-1300.)

VII. Take a field trip to an auto mechanics class or an automobile dealer's service department and have the class identify basic systems and components.

VIII. Give test.

INSTRUCTIONAL MATERIALS

I. Included in this unit:

   A. Objective sheet

   B. Information sheet

   C. Transparency masters

      1. TM 1--Basic Components of an Automobile Engine
      2. TM 2--Basic Components of a Fuel System
      3. TM 3--Basic Components of a Cooling System
      4. TM 4--Basic Components of a Heating System
      5. TM 5--Basic Components of an Air Conditioning System
      6. TM 6--Basic Components of a Conventional Ignition System

7. TM 7--Basic Components of an Electronic Ignition System
8. TM 8--Basic Components of a Starting System
9. TM 9--Basic Components of a Charging System
10. TM 10--Basic Components of an Exhaust System
11. TM 11--Basic Components of an Emission Control System
12. TM 12--Basic Components of a Drive Train
13. TM 13--Basic Components of a Front Suspension System
14. TM 14--Basic Components of a MacPherson Strut Suspension System
15. TM 15--Basic Components of a Conventional Steering System
16. TM 16--Basic Components of a Power Steering System
17. TM 17--Basic Components of a Rack and Pinion Steering System
18. TM 18--Basic Components of a Disc Brake System
19. TM 19--Basic Components of a Body System

D. Assignment sheets

1. Assignment Sheet #1--Solve Problems Concerning Basic Engine Service Needs
2. Assignment Sheet #2--Solve Problems Concerning Basic Cylinder Head and Valve Service
3. Assignment Sheet #3--Solve Problems Concerning Basic Ring and Bearing Service
4. Assignment Sheet #4--Solve Problems Concerning Additional Basic Engine Services
5. Assignment Sheet #5--Solve Problems Concerning Basic Fuel System Services
6. Assignment Sheet #6--Solve Problems Concerning Basic Carburetor and Pump Services
7. Assignment Sheet #7--Solve Problems Concerning Basic Cooling System Service
8. Assignment Sheet #8--Solve Problems Concerning Basic Ignition System Services
9. Assignment Sheet #9--Solve Problems Concerning Electrical System Services
10. Assignment Sheet #10--Solve Problems Concerning Basic Exhaust and Emission System Services

11. Assignment Sheet #11--Solve Problems Concerning Basic Drive Train System Services
12. Assignment Sheet #12--Solve Problems Concerning Basic Suspension and Steering System Services
13. Assignment Sheet #13--Solve Problems Concerning Basic Braking System Services
14. Assignment Sheet #14--Solve Problems Concerning Basic Body System Parts and Supplies

E. Answers to assignment sheets

F. Test

G. Answers to test

II. References:

A. *Automotive Wholesaler Counterman's Handbook.* Chicago, IL 60611: Automotive Service Industry Association, 1977.

B. Armstrong, Ivan J. *Auto Mechanics, Volume I.* Stillwater, OK 74074: Curriculum and Instructional Materials Center, Oklahoma State Department of Vocational and Technical Education, 1976.

C. Armstrong, Ivan J. *Auto Mechanics, Volume II.* Stillwater, OK 74074: Curriculum and Instructional Materials Center, Oklahoma State Department of Vocational and Technical Education, 1978.

D. *MacPherson Strut Suspension Rack and Pinion Steering Front-end Service Manual.* St. Louis, MO 73177: MOOG Automotive, Inc., 1979.

PARTS AND SYSTEMS IDENTIFICATION
UNIT V

INFORMATION SHEET

I. Basic systems of an automobile and their definitions

   A. Engine--A machine that converts a fuel into heat energy which produces mechanical force and motion

   B. Fuel system--Supplies a combustible mixture of air and fuel to the engine cylinders to meet all driving conditions

   C. Cooling system--Keeps the engine at its most efficient operating temperature during all engine speeds and driving conditions

   D. Ignition system--Provides a high voltage spark to ignite the fuel-air mixture in the combustion chamber

   E. Starting system--Converts electrical power from the battery into mechanical energy to crank the engine

   F. Charging system--Recharges the battery and maintains a supply of electrical current to meet the operating needs of the automobile

   G. Exhaust system--Conducts burned gases away from the engine and passenger compartment through catalytic converter, muffler, and pipes

   H. Emission control system--Devices on an automobile to control air pollution

   I. Drive train--Delivers the power developed by the engine through clutch to the transmission drive shaft, differential to the wheels for motion

   J. Suspension system--Mounted to the framework through a series of linkages and springs to allow the wheels to move up and down on rough roads while the rest of the vehicle remains fairly steady

   K. Steering system--Allows control of direction of the vehicle through a gearbox and linkage connected to the front wheels

   L. Brake system--Method by which an operator slows or stops a vehicle

   M. Body system--Outer shell that provides protected area for auto components, people, luggage, etc.

II. Automobile engine and related components (Transparency 1)

   A. Air filter

   B. Carburetor

   C. Intake manifold

   D. Rocker arms

INFORMATION SHEET

- E. Valve cover
- F. Push rods
- G. Cylinder head
- H. Cylinder block
- I. Distributor
- J. Flywheel
- K. Oil filter
- L. Valve lifter
- M. Camshaft
- N. Oil pump
- O. Crankshaft
- P. Fuel pump
- Q. Oil pan
- R. Piston
- S. Connecting rod
- T. Camshaft gear
- U. Vibration dampener
- V. Crankshaft gear
- W. Camshaft gear cover
- X. Water pump
- Y. Valve
- Z. Cylinder

III. Components of a fuel system (Transparency 2)

- A. Air cleaner
- B. Fuel filter
- C. Carburetor
- D. Fuel line

INFORMATION SHEET

- E. Fuel pump
- F. Fuel tank

IV. Components of a cooling system (Transparency 3)

- A. Pressure cap
- B. Radiator
- C. Shroud
- D. Radiator hose
- E. V-belt
- F. Water pump
- G. Water jackets
- H. Thermostat
- I. Fan
- J. Fan clutch

V. Components of a heating system (Transparency 4)

- A. Water pump
- B. Thermostat
- C. Water control valve
- D. Heater hoses
- E. Heater plenum
- F. Heater core
- G. Blower
- H. Defroster
- I. Control system

VI. Components of an air conditioning system (Transparency 5)

- A. Condenser
- B. Receiver-drier
- C. Expansion valve
- D. Evaporator

INFORMATION SHEET

- E. Compressor
- F. Low side service fitting (suction)
- G. High side service fitting (discharge)

VII. Components of a conventional ignition system (Transparency 6)

- A. Spark advance mechanism
- B. Breaker cam
- C. Spark plug
- D. Distributor
- E. Rotor
- F. Distributor cap
- G. Ignition coil
- H. Primary ignition wire
- I. Primary resistance unit
- J. Ignition switch
- K. Secondary ignition cable (spark plug wire)
- L. Contact points
- M. Condenser
- N. Battery

VIII. Components of an electronic ignition system (Transparency 7)

- A. Resistor unit
- B. Control unit
- C. Ignition switch
- D. Ignition coil
- E. Distributor
- F. Armature
- G. Magnetic pickup assembly
- H. Distributor housing

INFORMATION SHEET

IX. Components of a starting system (Transparency 8)

   A. Key switch
   B. Small gauge switch wire
   C. Starter switch
   D. Solenoid
   E. Starter
   F. Battery
   G. Battery cable

X. Components of a charging system (Transparency 9)

   A. Regulator
   B. Ammeter
   C. Battery
   D. Alternator
   E. Generator

XI. Components of an exhaust system (Transparency 10)

   A. Manifold heat control valve
   B. Exhaust manifold
   C. Catalytic converter
   D. Exhaust pipe
   E. Crossover pipe
   F. Pipe clamps
   G. Pipe hangers
   H. Tail pipe
   I. Resonator
   J. Muffler

XII. Components of an emission control system (Transparency 11)

   A. EGR control valve
   B. Distributor

INFORMATION SHEET

- C. Coolant control engine vacuum switch (PVS)
- D. Charcoal canister
- E. Air pump
- F. Manifold converter
- G. Electronic spark control computer
- H. Catalytic converter
- I. Fuel tank
- J. Pressure-vacuum relief filler cap
- K. Computer control spark advance
- L. Carburetor
- M. PCV valve

XIII. Components of a drive train (Transparency 12)

- A. Clutch
- B. Transmission
- C. U-joints
- D. Drive shaft
- E. Differential or transaxle
- F. Wheels

XIV. Components of a front suspension system (Transparency 13)

- A. Upper control arm inner bushings
- B. Adjusting shims
- C. Stabilizer bar
- D. Lower control arm
- E. Shock absorber
- F. Rubber bumper
- G. Lower ball joint
- H. Steering knuckle
- I. Upper ball joint

INFORMATION SHEET

J. Upper control arm

K. Coil spring

L. Lower control arm inner bushings

XV. Components of a MacPherson strut suspension system (Transparency 14)

A. Shock

B. Strut

C. Spindle

D. Sway bar

E. Control arm

F. Ball joint

G. Coil spring

H. Strut rod

XVI. Components of a conventional steering system (Transparency 15)

A. Steering column

B. Steering gear

C. Pitman arm

D. Idler arm

E. Steering arm

F. Center or relay link

G. Tie rods

H. Steering knuckle

I. Steering spindle bolt

XVII. Components of a power steering system (Transparency 16)

A. Pump assembly

B. Fluid line

C. Control valve

D. Tie rods

E. Power cylinder

INFORMATION SHEET

XVIII. Components of a rack and pinion steering system (Transparency 17)

A. Pinion gear preload adjustment

B. Pinion gear

C. Rack lash adjustment

D. Bellows

E. Housing

F. Rack

G. Inner tie rod end

XIX. Basic components of a disc brake system (Transparency 18)

A. Master cylinder

B. Power booster

C. Metering valve

D. Pressure differential valve

E. Proportioning valve

F. Combination valve

(NOTE: A combination valve contains the metering valve, pressure differential valve, and proportioning valve all in one housing.)

G. Rear drum or disc brake assembly

H. Front disc or rotor assembly

I. Outboard pad

J. Inboard pad

K. Caliper assembly

L. Piston "o" ring

M. Hose

N. Lines

INFORMATION SHEET

XX. Components of a body system (Transparency 19)

  A. Outer roof rail assembly
  B. Windshield header assembly
  C. Instrument panel assembly
  D. Shroud and dash assembly
  E. Rocker panel assembly
  F. Door assembly
  G. Under body assembly
  H. Rear quarter panel assembly
  I. Rear end panel assembly
  J. Rear compartment deck lid
  K. Rear window panel assembly

XXI. Basic systems and tools and supplies needed to repair them

  A. Engine (Refer to Assignment Sheet #1)
    1. Oil filter
    2. Motor oil
    3. Drain plug
    4. Oil absorber
    5. Valves (Refer to Assignment Sheet #2)
    6. Valve springs
    7. Valve guides
    8. Valve operating parts
    9. Valve stem oil seals
    10. Gasket sealing compounds
    11. Gaskets
    12. Piston ring sets (Refer to Assignment Sheet #3)
    13. Pistons
    14. Bearings, for connecting rods and mains

INFORMATION SHEET

15. Oil seals
16. Timing gears/chains (Refer to Assignment Sheet #4)
17. Expansion plugs (freeze plugs)

B. Fuel system (Refer to Assignment Sheet #5)

1. Fuel tank cap
2. Carburetors (Refer to Assignment Sheet #6)
3. Fuel lines and hoses
4. Fuel pumps
5. Fuel filters
6. Carburetor parts and kits
7. Air filter

C. Cooling system (Refer to Assignment Sheet #7)

1. Thermostats
2. Pressure caps
3. Water pump
4. Fans
5. Hoses and clamps
6. Air conditioning parts
7. Drive belts
8. Related items (heater blower motors, valves, switches, gauges, etc.)
9. Cooling system chemicals

D. Ignition system (Refer to Assignment Sheet #8)

1. Points and condensers
2. Advance mechanisms
3. Distributor cap and rotor
4. Spark plug wires
5. Spark plugs
6. Ignition coil

INFORMATION SHEET

  7. Electronic ignition parts
  8. Distributors

E. Starting system (Refer to Assignment Sheet #9)
  1. New and rebuilt starters
  2. Solenoids
  3. Starter switches
  4. Wiring
  5. Terminal repair kits
  6. Bushings
  7. Brushes (starter)

F. Charging system (Refer to Assignment Sheet #9)
  1. New and rebuilt alternators
  2. Regulators
  3. Bearings
  4. Brushes (alternator)
  5. Diodes
  6. Heat sinks

G. Exhaust system (Refer to Assignment Sheet #10)
  1. Mufflers and pipes
  2. Supports and clamps
  3. Catalytic converters
  4. Sealers and looseners (exhaust)

H. Emission system (Refer to Assignment Sheet #10)
  1. PCV valve
  2. Exhaust gas recirculation valve (EGR)
  3. Electronic ignition systems
  4. Charcoal canister
  5. Air injection pump

INFORMATION SHEET

6. Early fuel evaporation control valve
7. Vacuum switches

I. Drive train (Refer to Assignment Sheet #11)

1. Clutch release bearing
2. Clutch pilot bearing
3. Clutch disc
4. Pressure plate
5. Transmission overhaul kits
6. Modulators
7. Filter or strainers
8. Fluids and lubricants
9. Drive shafts
10. U-joints
11. Rear axle assemblies

J. Suspension system (Refer to Assignment Sheet #12)

1. Shock absorbers
2. Coil springs
3. Lower ball joints
4. Upper ball joints
5. Spindle
6. Control arm bushings

K. Steering system (Refer to Assignment Sheet #12)

1. Power steering valves and cylinders
2. Power steering pumps
3. Power steering belts, hoses, fluid and kits
4. Idler arm
5. Relay rod
6. Tie rods

INFORMATION SHEET

7. Steering gear
8. Pitman arm

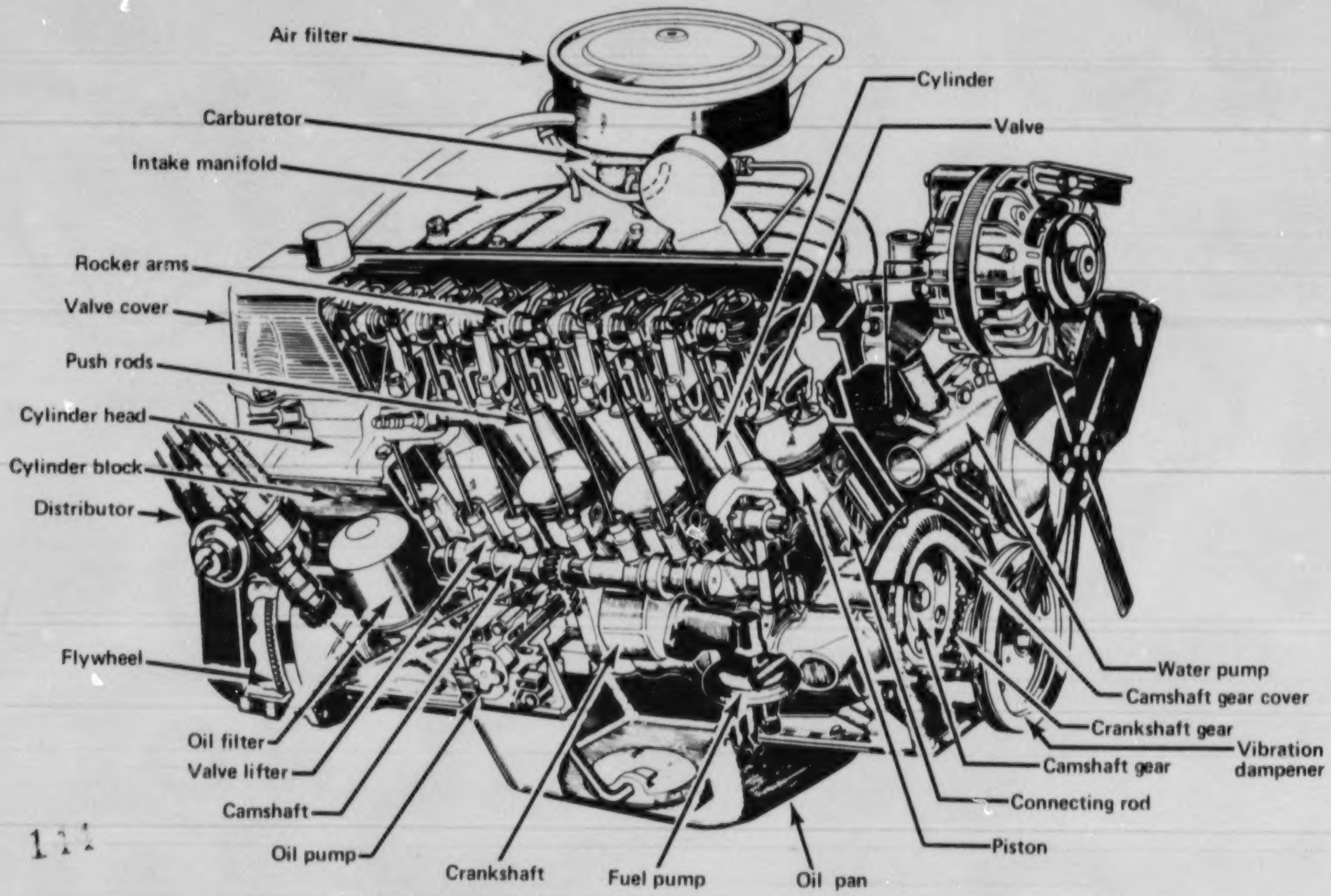
L. Brake system (Refer to Assignment Sheet #13)

1. Brake shoes
2. Disc pads
3. Brake hardware
4. Brake hoses, line and valves
5. Wheel cylinders and calipers
6. Master cylinder
7. Power brake boosters
8. Brake fluid
9. Rotors
10. Drums
11. Wheel bearings

M. Body system (Refer to Assignment Sheet #14)

1. Beauty care items
2. Masking tape
3. Putty
4. Paint
5. Thinners
6. Respirators
7. Rubbing compounds
8. Epoxy repair materials
9. Sandpaper
10. Undercoating compounds

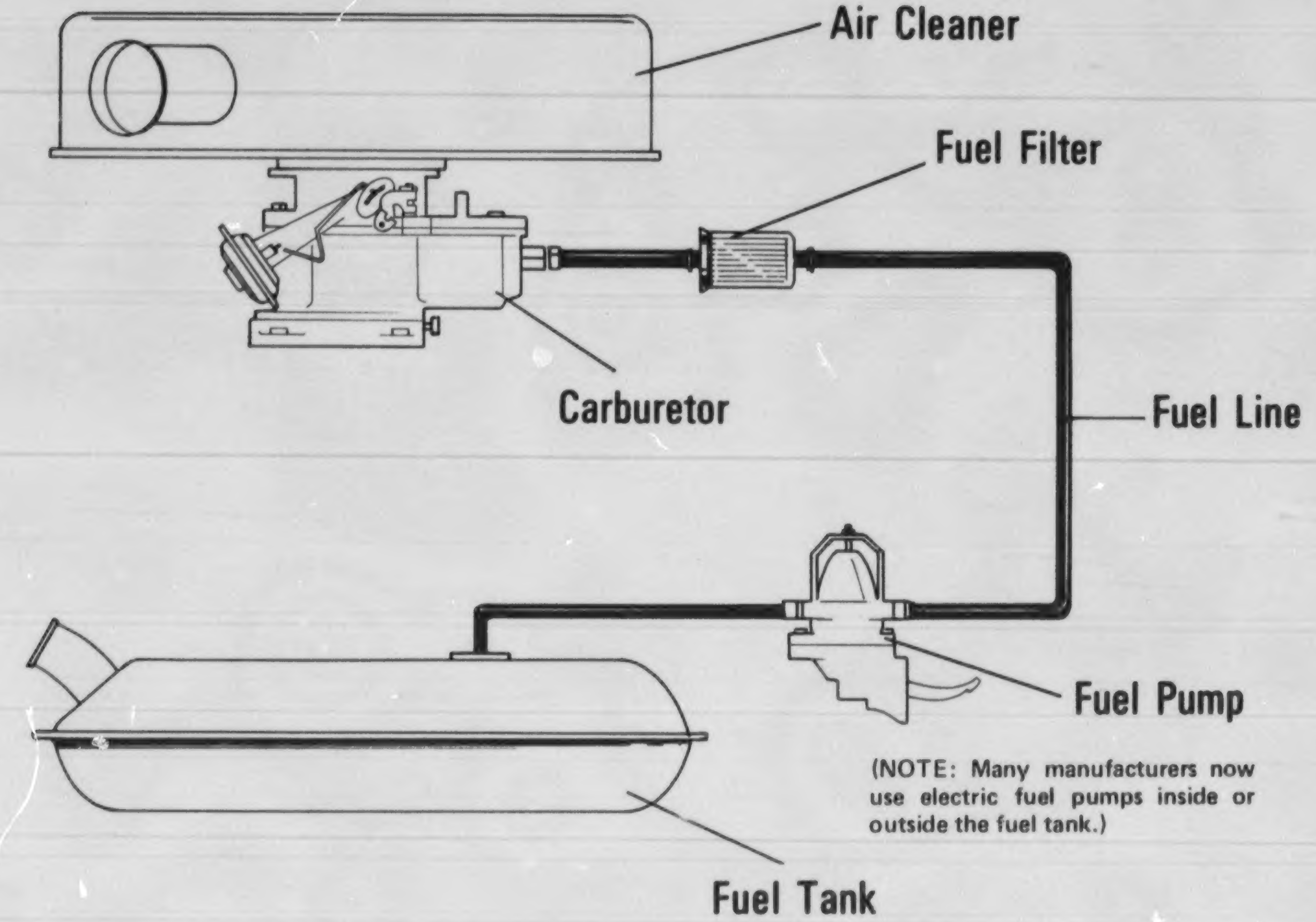
Basic Components of an Automobile Engine


Air filter
Carburetor
Intake manifold
Rocker arms
Valve cover
Push rods
Cylinder head
Cylinder block
Distributor
Flywheel
Oil filter
Valve lifter
Camshaft
Oil pump
Crankshaft
Fuel pump
Oil pan
Cylinder
Valve
Water pump
Camshaft gear cover
Crankshaft gear
Vibration dampener
Camshaft gear
Connecting rod
Piston

TM 1

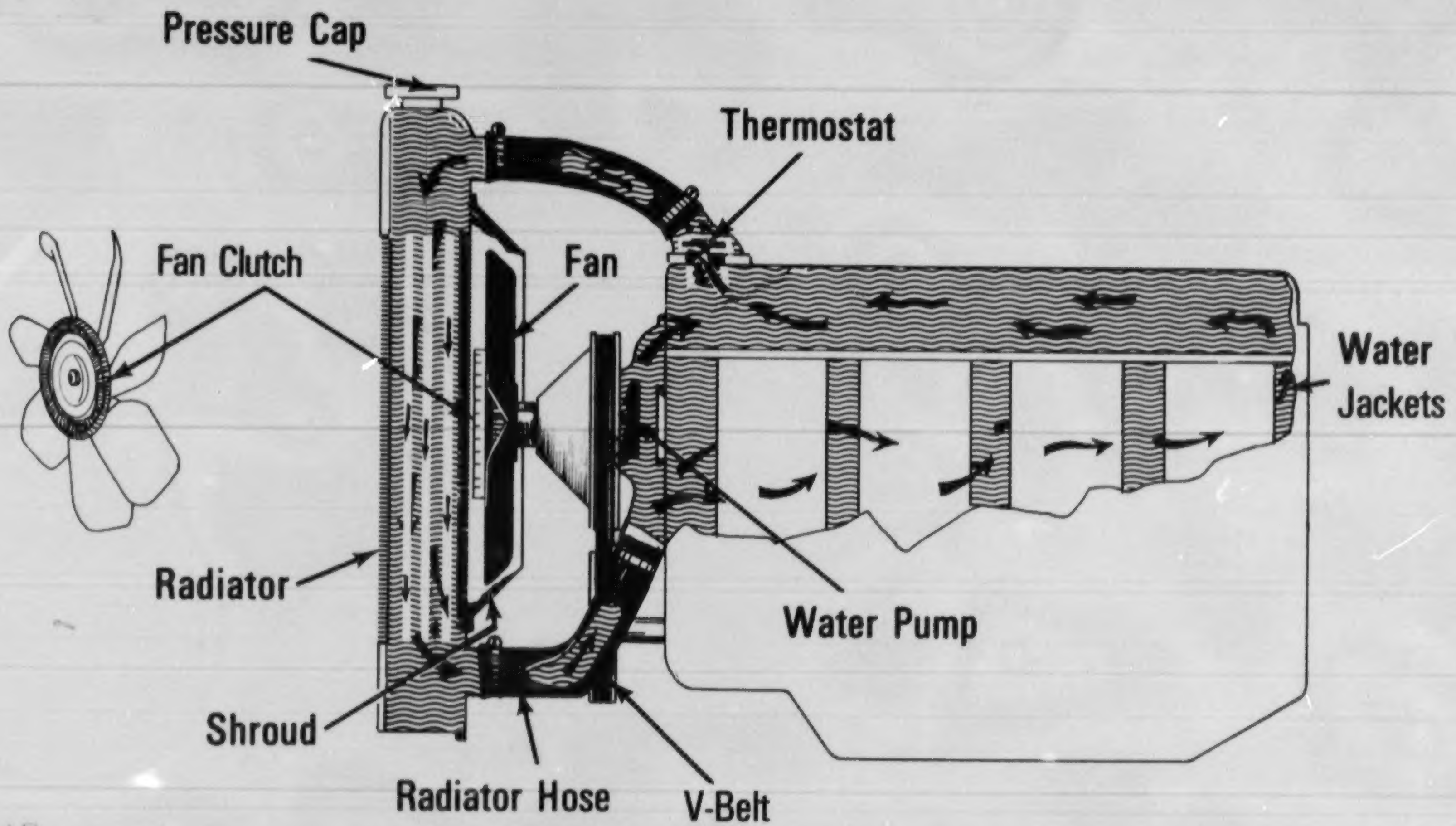
PS-141

Basic Components of a Fuel System

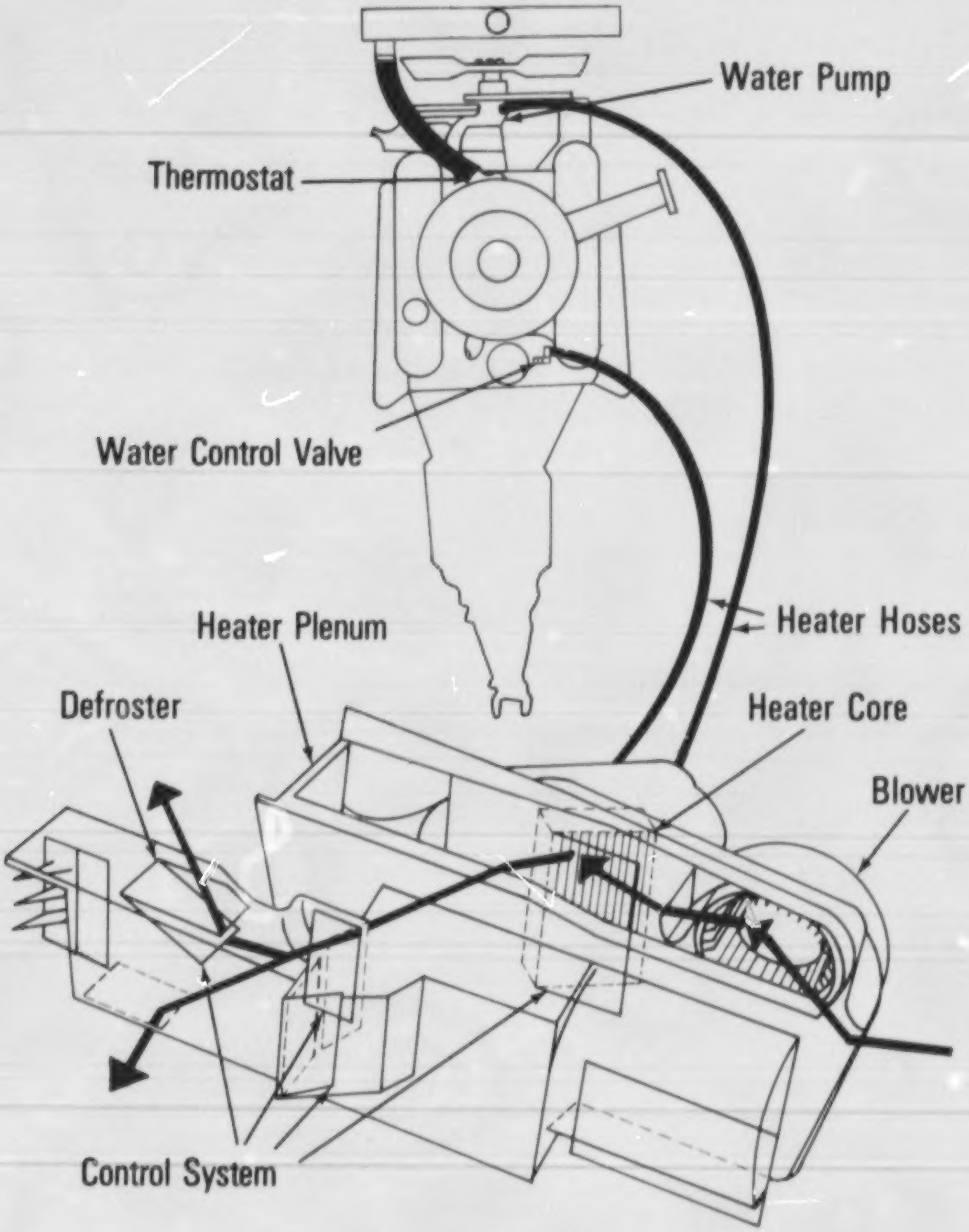

Air Cleaner
Fuel Filter
Carburetor
Fuel Line
Fuel Pump
Fuel Tank

(NOTE: Many manufacturers now use electric fuel pumps inside or outside the fuel tank.)

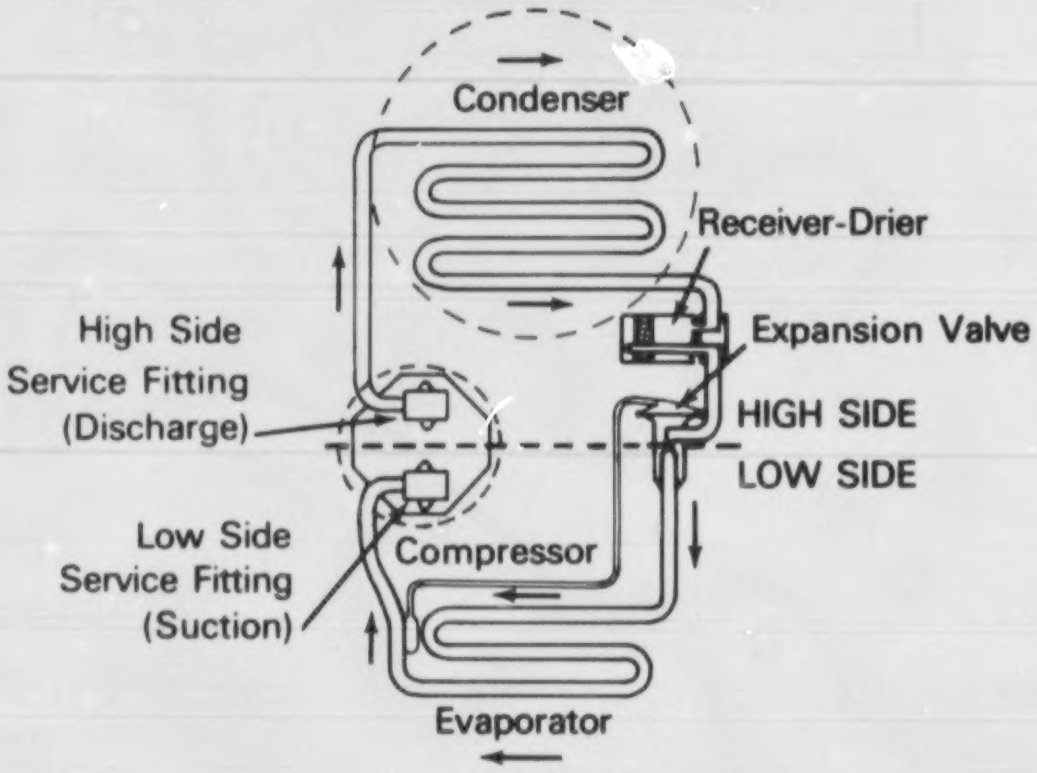
Basic Components of a Cooling System


Pressure Cap
Thermostat
Fan Clutch
Fan
Water Jackets
Radiator
Water Pump
Shroud
Radiator Hose
V-Belt

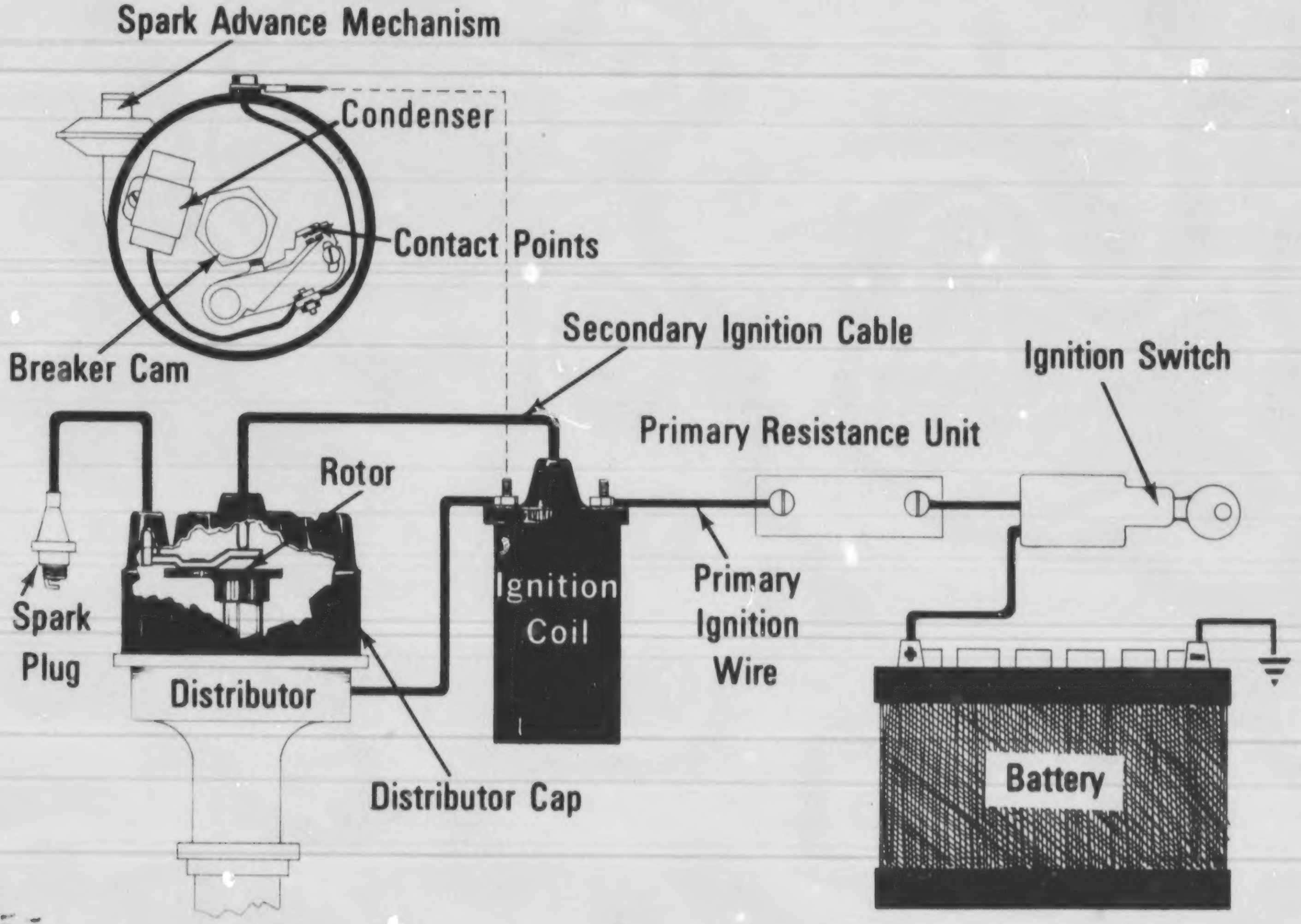
Basic Components of a Heating System


Water Pump
Thermostat
Water Control Valve
Heater Hoses
Heater Plenum
Defroster
Heater Core
Blower
Control System

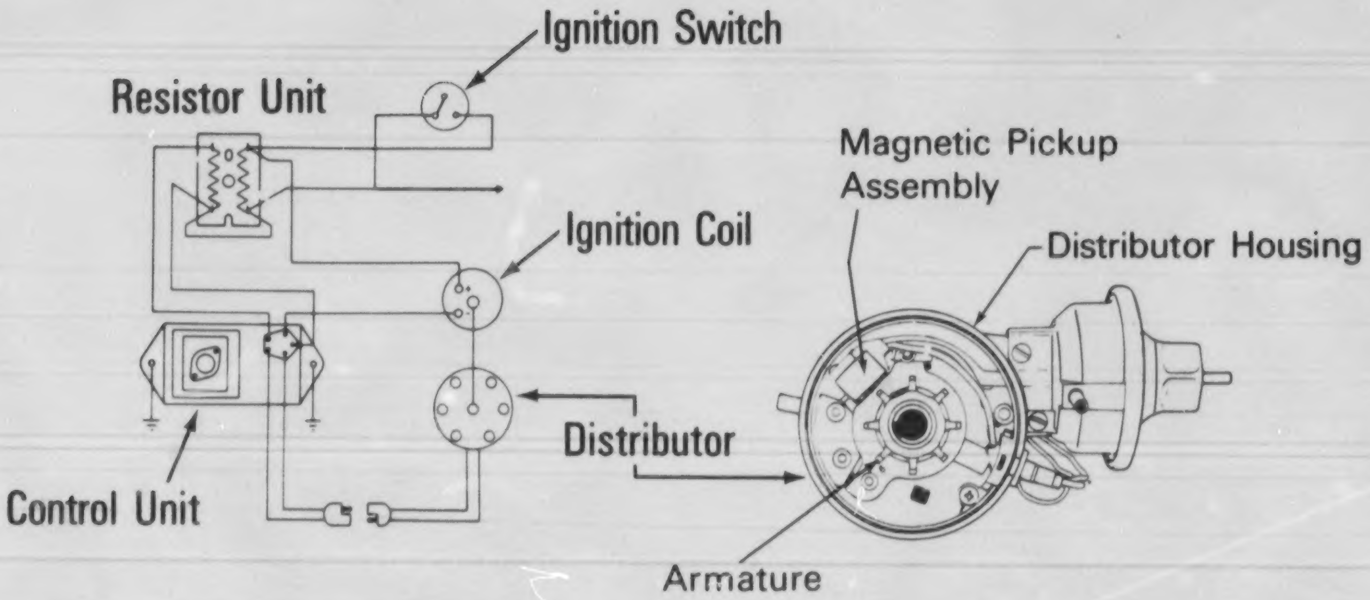
Basic Components of an Air Conditioning System


Condenser
Receiver-Drier
Expansion Valve
HIGH SIDE
LOW SIDE
High Side
Service Fitting
(Discharge)
Low Side
Service Fitting
(Suction)
Compressor
Evaporator

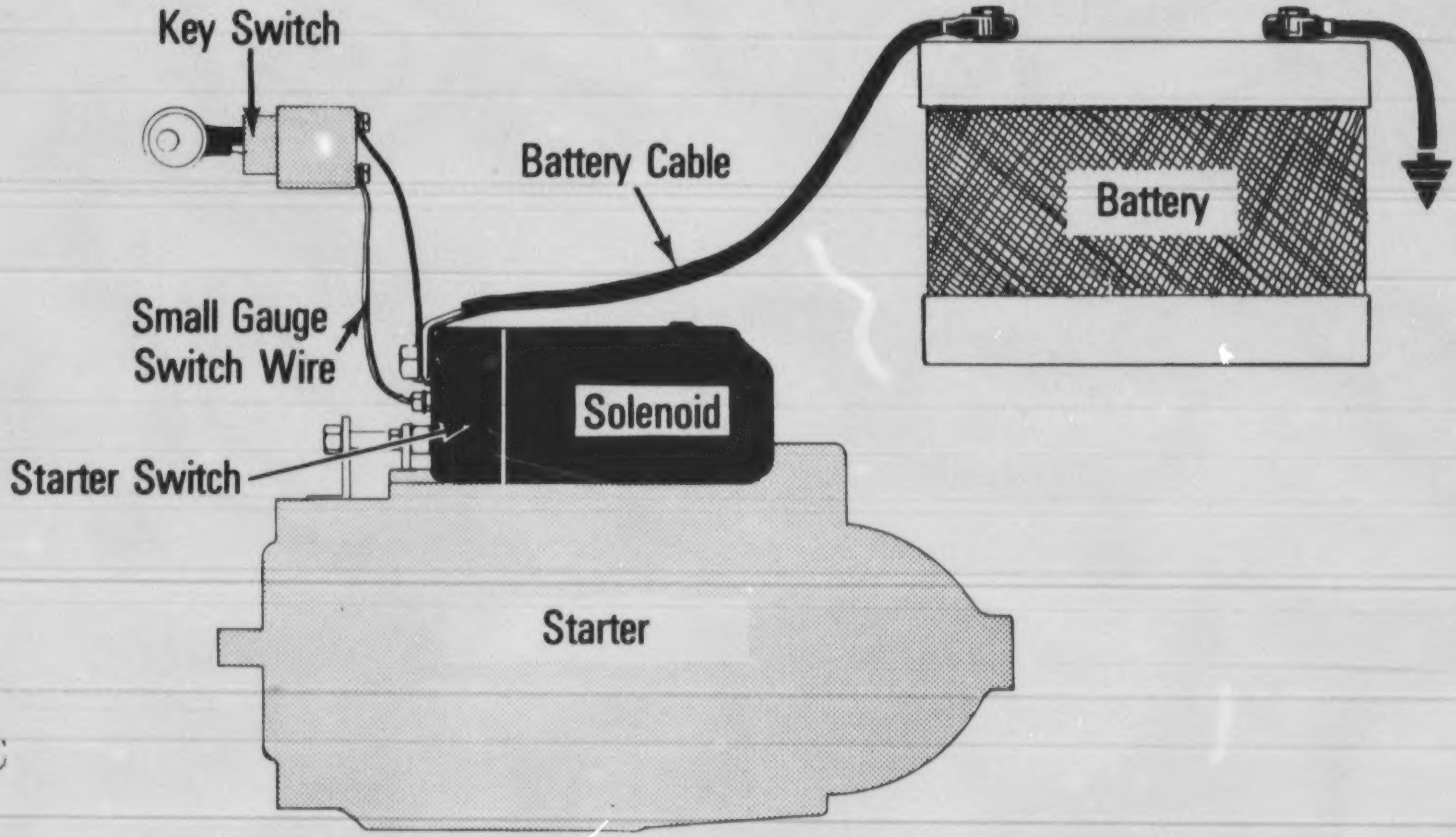
Basic Components of a Conventional Ignition System


Spark Advance Mechanism
Condenser
Contact Points
Breaker Cam
Secondary Ignition Cable
Ignition Switch
Primary Resistance Unit
Rotor
Spark Plug
Distributor
Ignition Coil
Primary Ignition Wire
Distributor Cap
Battery

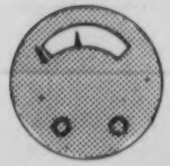
Basic Components of an Electronic Ignition System


Ignition Switch
Resistor Unit
Magnetic Pickup Assembly
Ignition Coil
Distributor Housing
Distributor
Control Unit
Armature

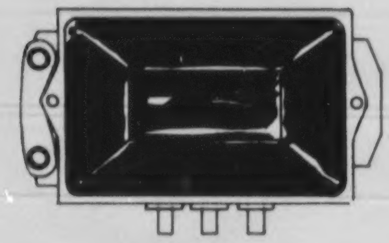
Basic Components Of a Starting System


Key Switch
Battery Cable
Battery
Small Gauge Switch Wire
Solenoid
Starter Switch
Starter

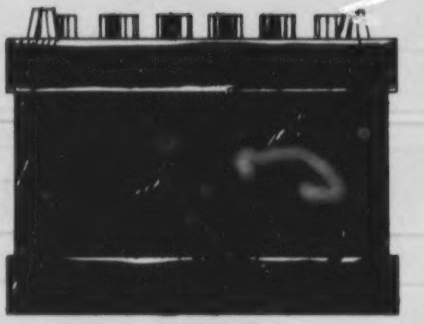
Basic Components of a Charging System



Ammeter

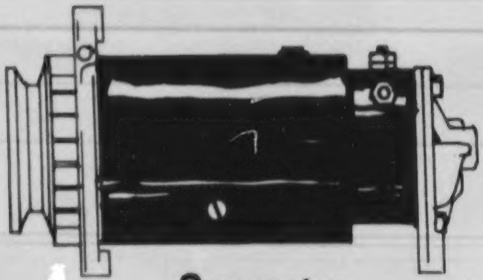


Regulator

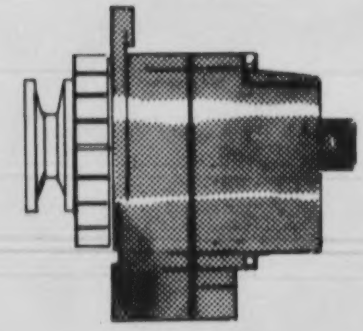


Battery

(NOTE: Indicator light replaces ammeter on some models.)

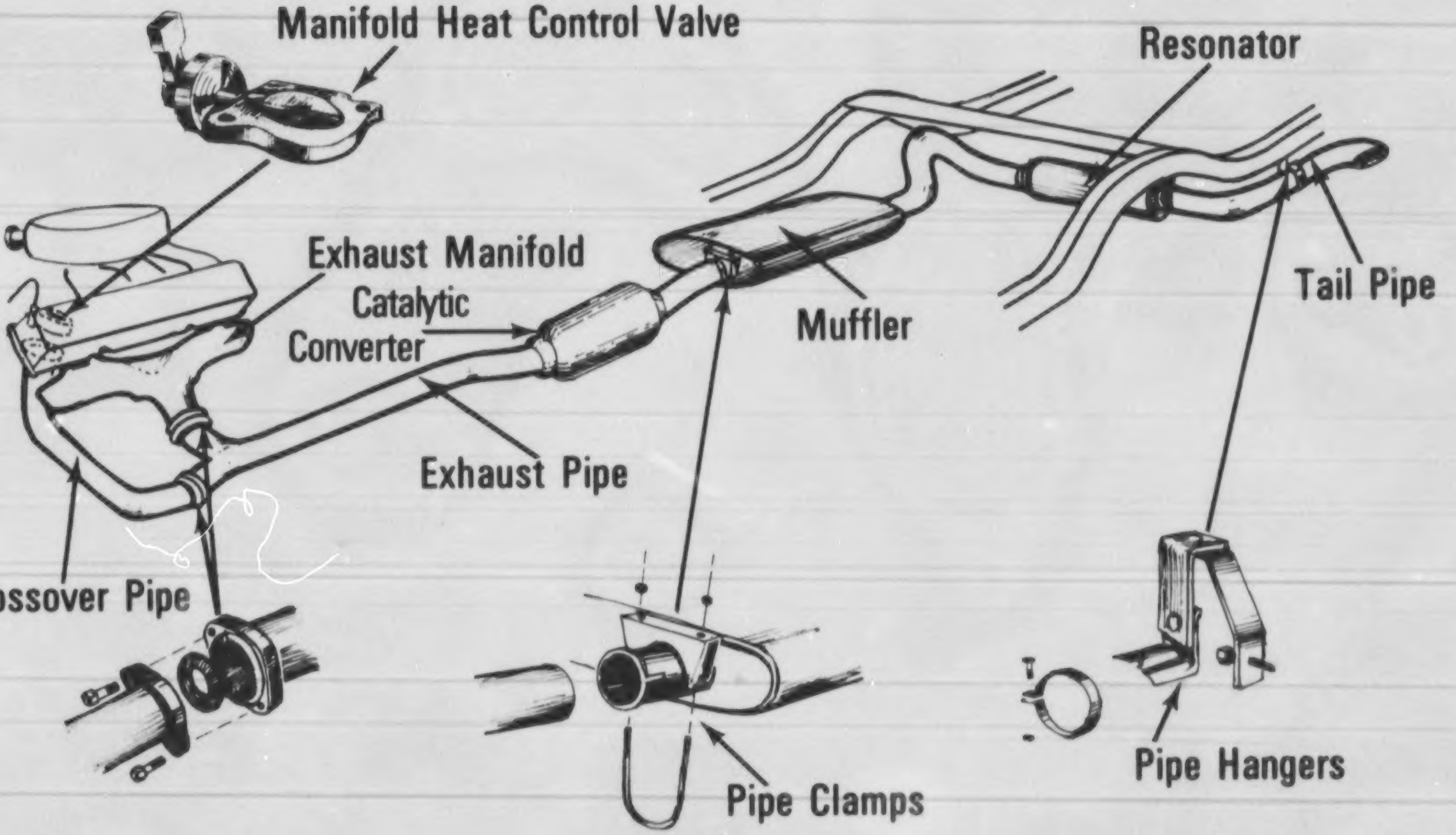


Generator

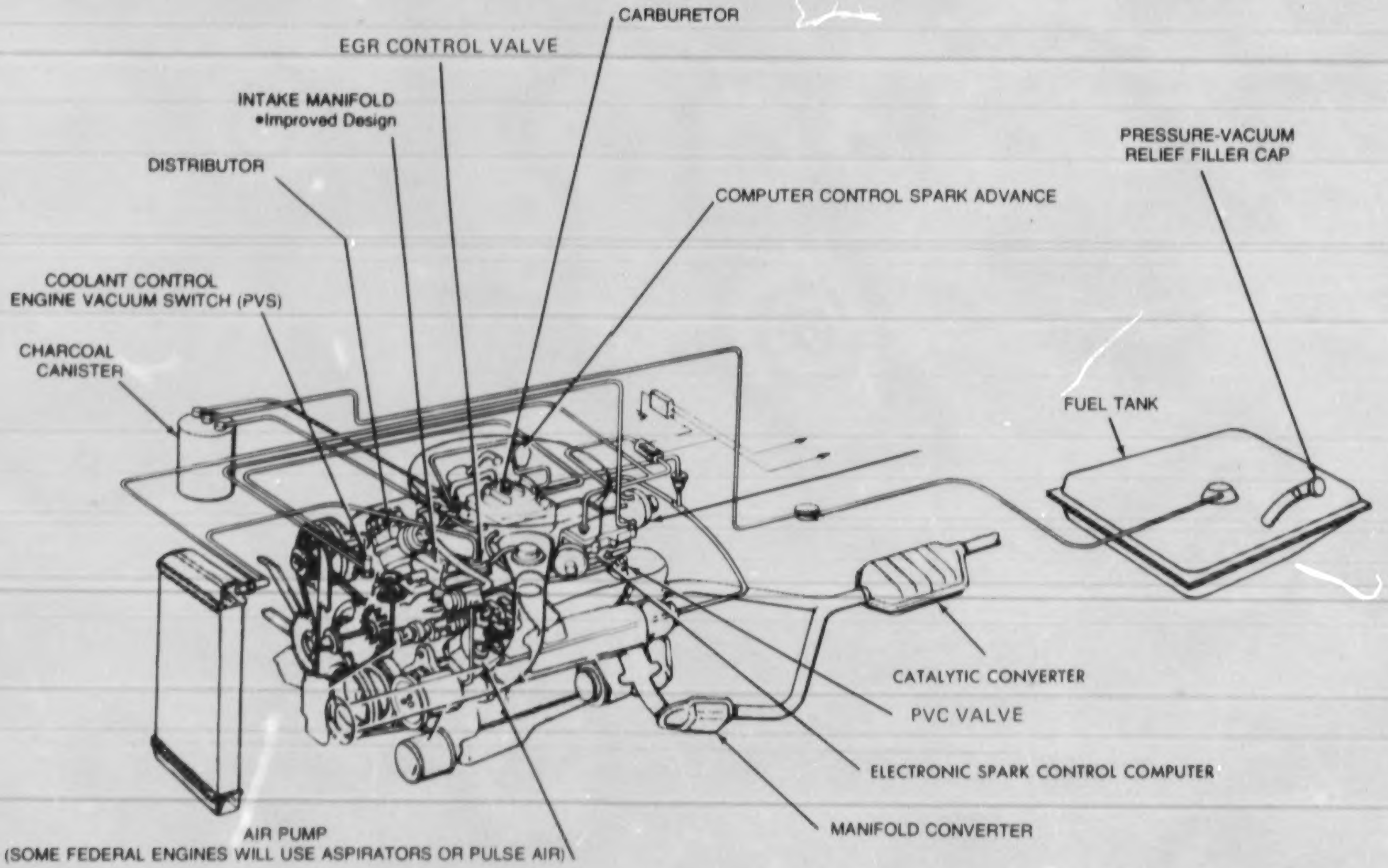


Alternator

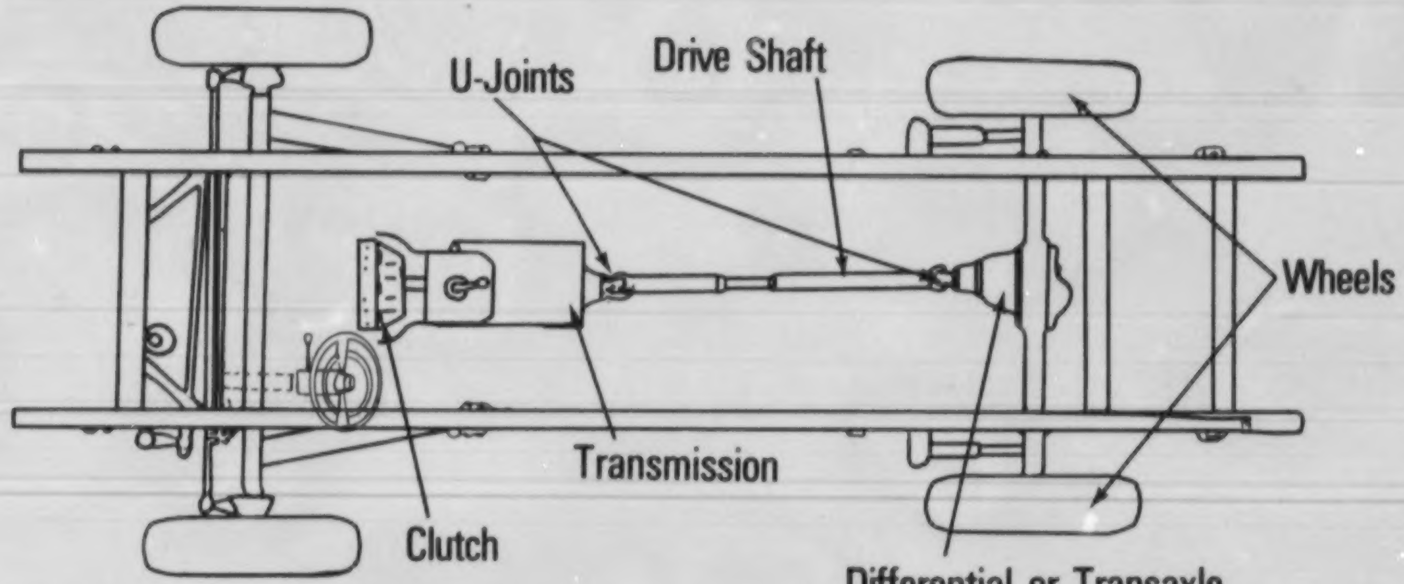
Basic Components of an Exhaust System


Manifold Heat Control Valve
Resonator
Exhaust Manifold
Catalytic Converter
Muffler
Tail Pipe
Exhaust Pipe
Crossover Pipe
Pipe Clamps
Pipe Hangers

Basic Components of an Emission Control System

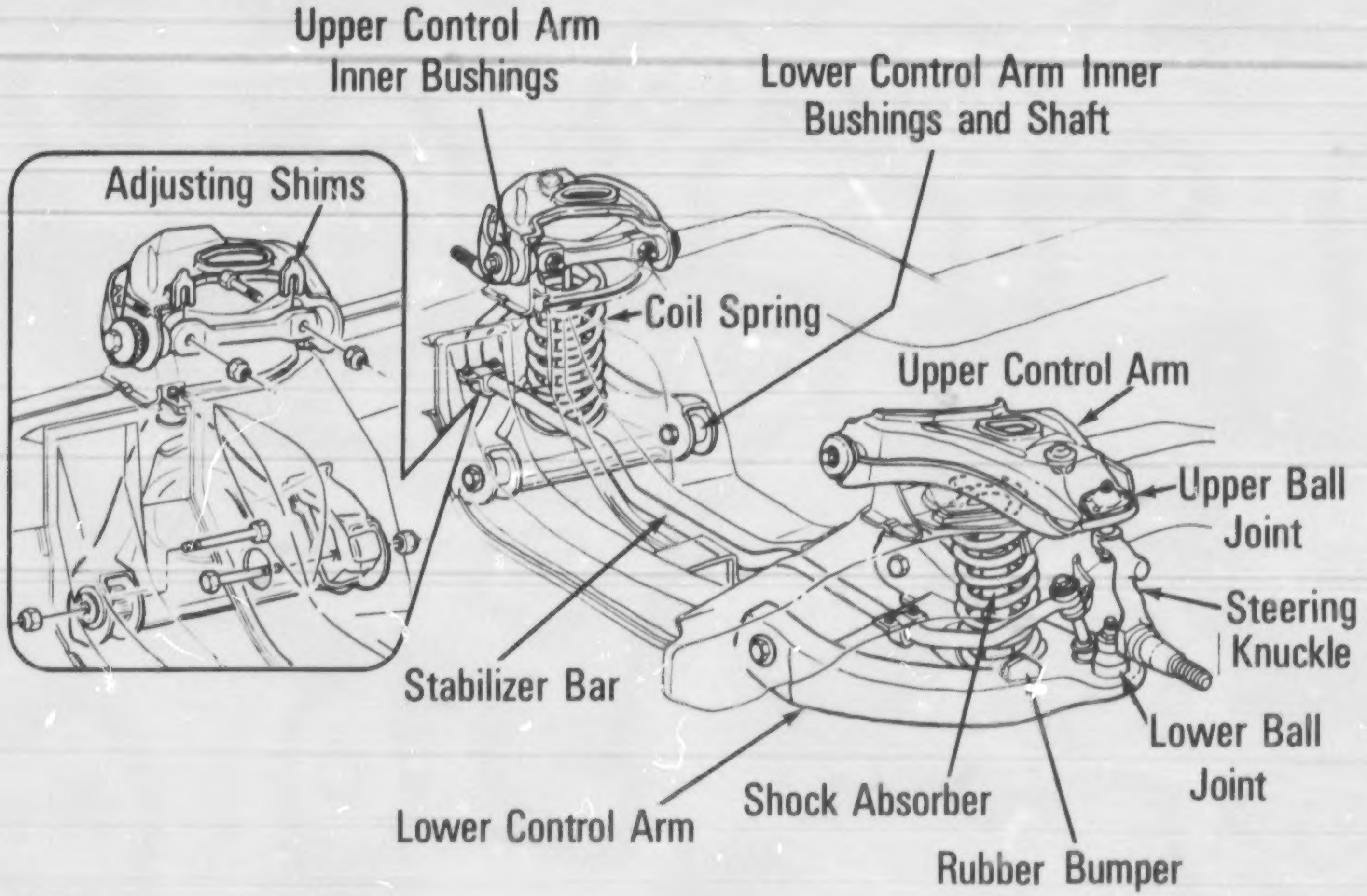

CARBURETOR
EGR CONTROL VALVE
INTAKE MANIFOLD
•Improved Design
DISTRIBUTOR
COMPUTER CONTROL SPARK ADVANCE
PRESSURE-VACUUM RELIEF FILLER CAP
COOLANT CONTROL ENGINE VACUUM SWITCH (PVS)
CHARCOAL CANISTER
FUEL TANK
CATALYTIC CONVERTER
PVC VALVE
ELECTRONIC SPARK CONTROL COMPUTER
MANIFOLD CONVERTER
AIR PUMP
(SOME FEDERAL ENGINES WILL USE ASPIRATORS OR PULSE AIR)

Basic Components of a Drive Train

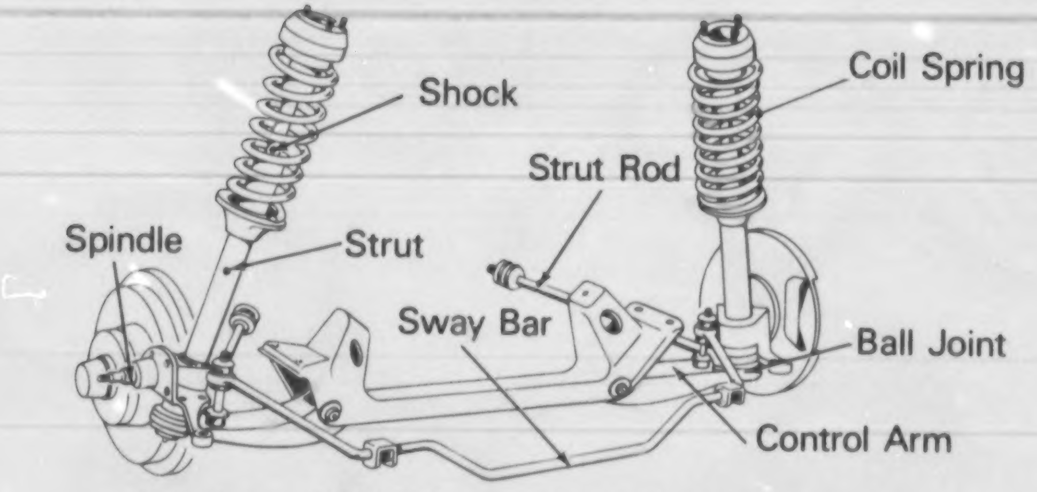

U-Joints
Drive Shaft
Wheels
Transmission
Clutch
Differential or Transaxle

(NOTE: Transaxles are used in front-wheel drive vehicles.)

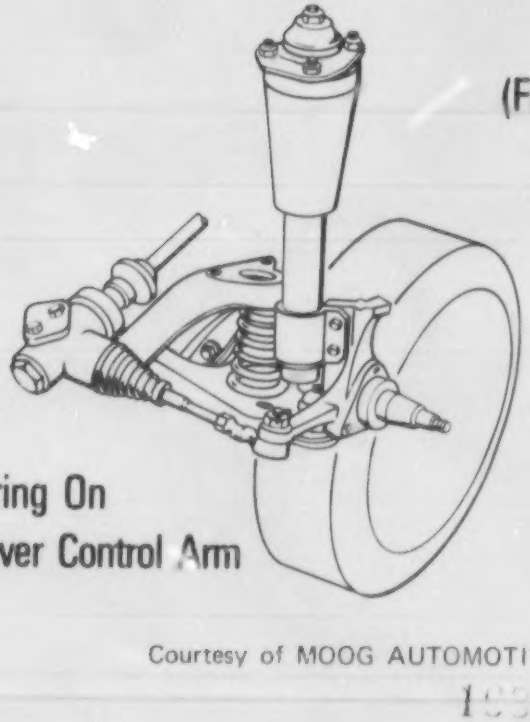
Basic Components of a Front Suspension System


Upper Control Arm Inner Bushings
Lower Control Arm Inner Bushings and Shaft
Adjusting Shims
Coil Spring
Upper Control Arm
Upper Ball Joint
Steering Knuckle
Stabilizer Bar
Lower Ball Joint
Shock Absorber
Lower Control Arm
Rubber Bumper

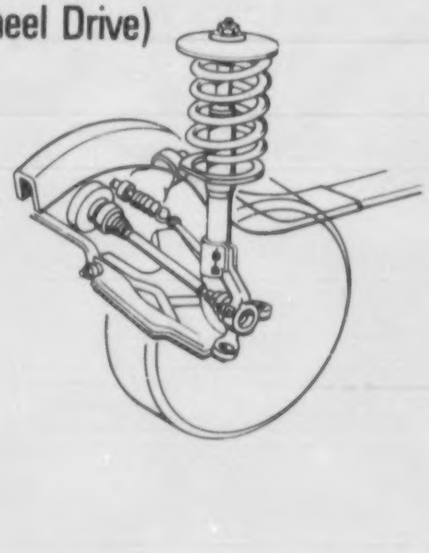
Basic Components of a MacPherson Strut Suspension System


Shock
Coil Spring
Strut Rod
Spindle
Strut
Sway Bar
Ball Joint
Control Arm

Variations of MacPherson Strut Suspension



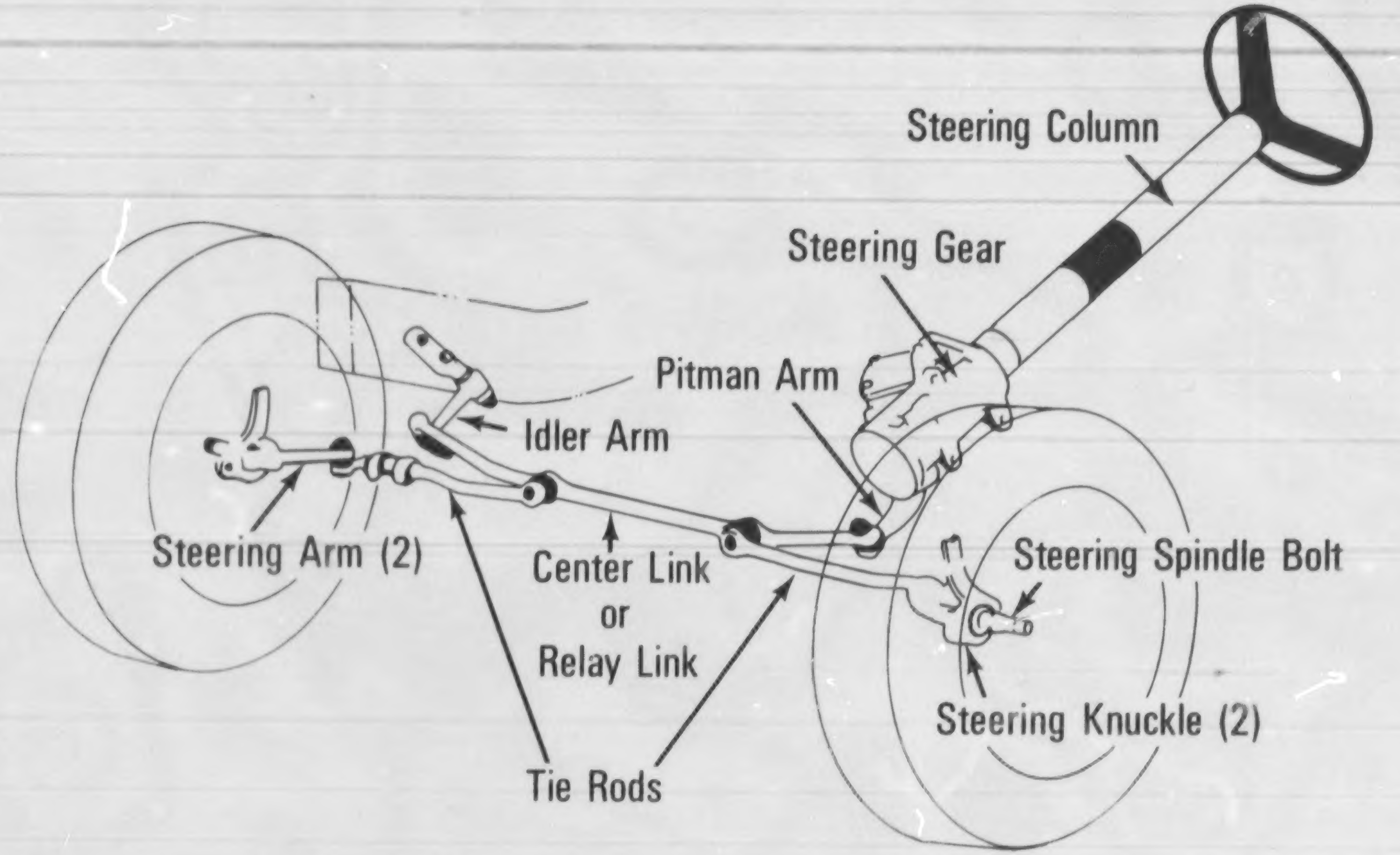
Spring On
Lower Control Arm



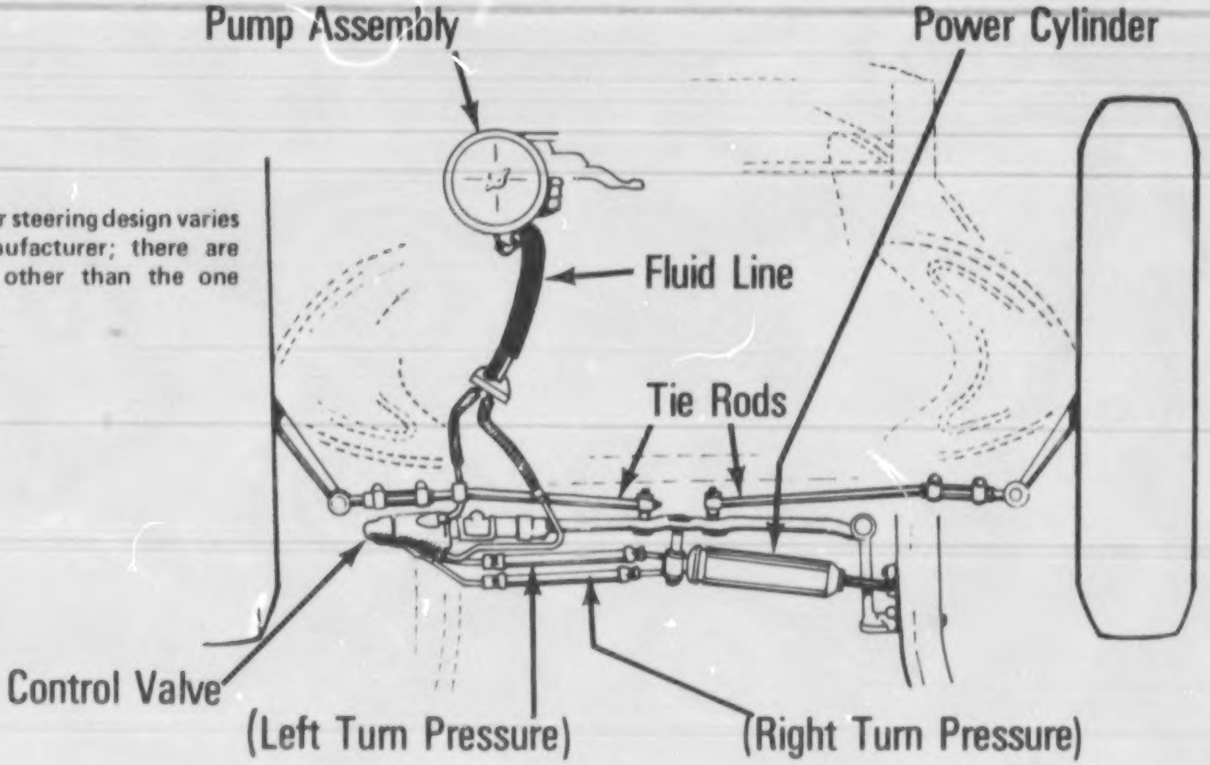
Coil Spring
Around Strut
(Front Wheel Drive)

Courtesy of MOOG AUTOMOTIVE INC., St. Louis, Missouri

Basic Components of a Conventional Steering System

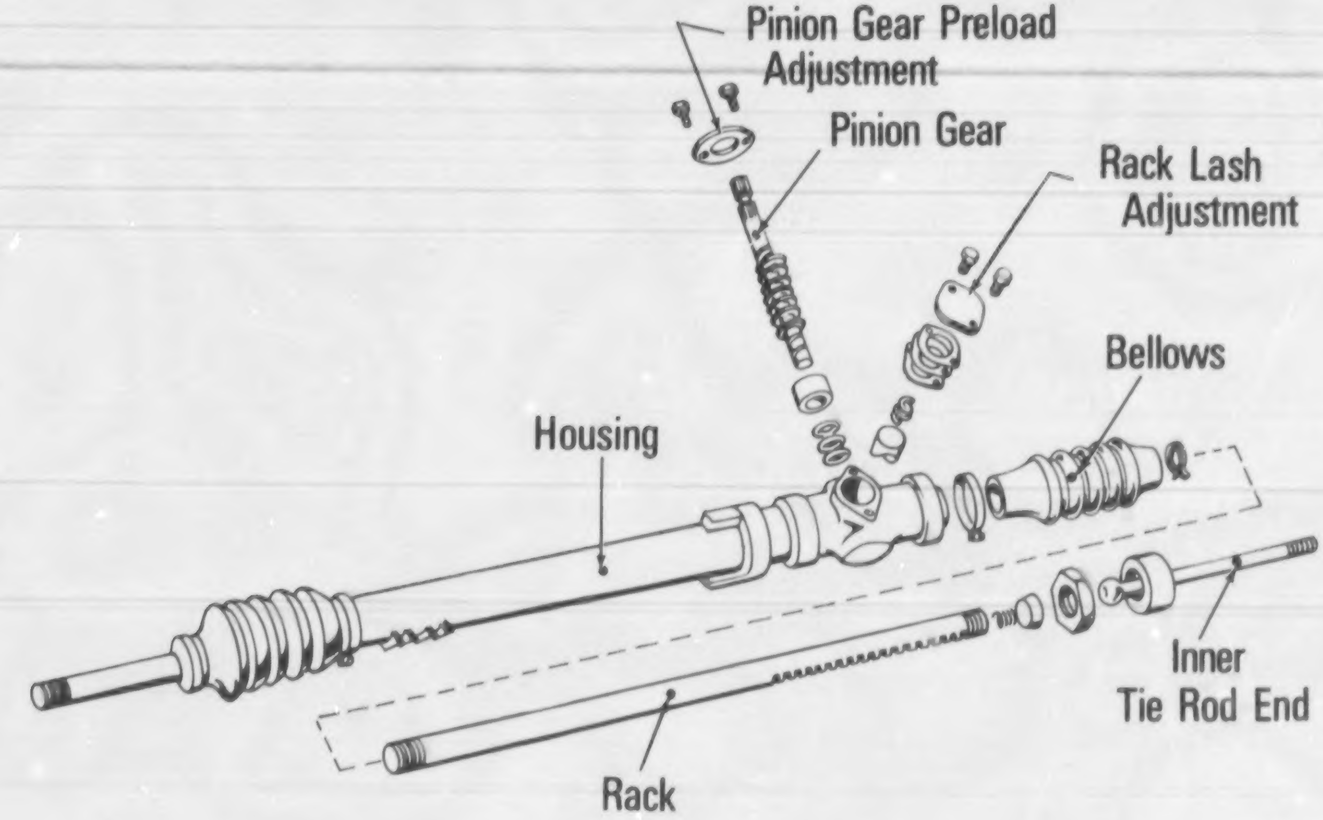

Steering Column
Steering Gear
Pitman Arm
Idler Arm
Steering Arm (2)
Center Link
or
Relay Link
Steering Spindle Bolt
Steering Knuckle (2)
Tie Rods

Basic Components of a Power Steering System


Pump Assembly
Power Cylinder
Fluid Line
Tie Rods
Control Valve
(Left Turn Pressure)
(Right Turn Pressure)

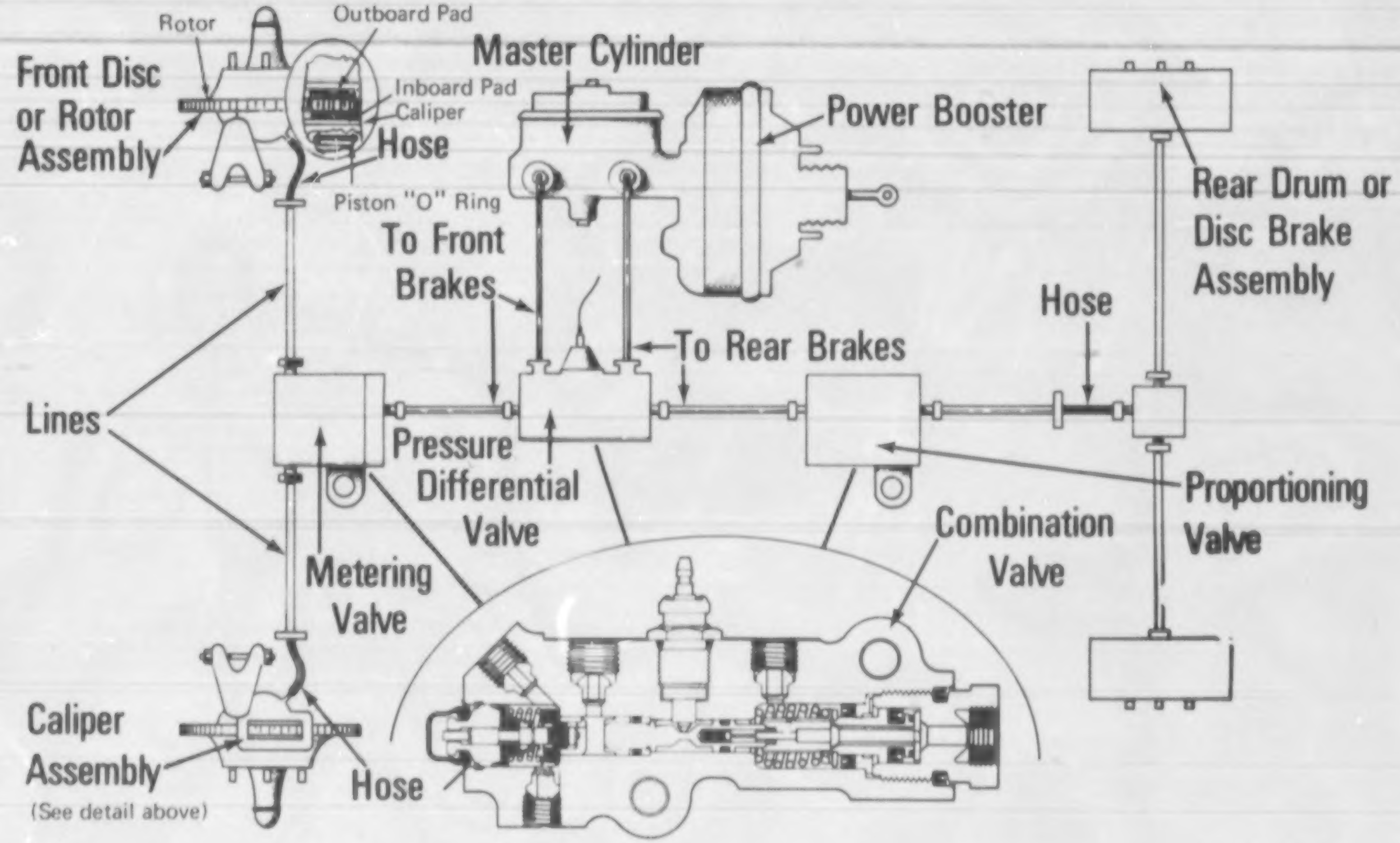
(NOTE: Power steering design varies with the manufacturer; there are several types other than the one shown here.)

Basic Components of a Rack and Pinion Steering System

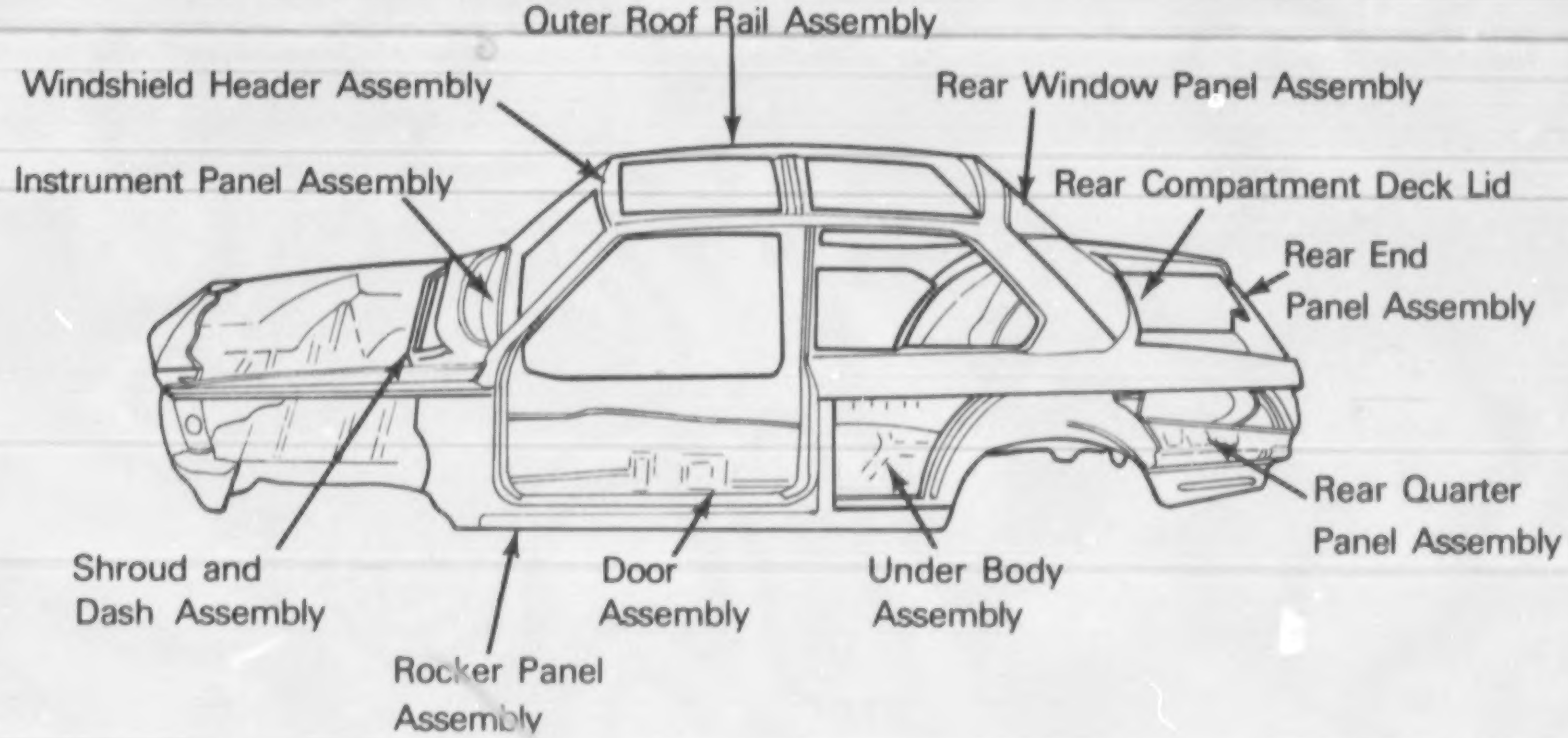

Pinion Gear Preload Adjustment
Pinion Gear
Rack Lash Adjustment
Bellows
Housing
Inner Tie Rod End
Rack

Courtesy of MOOG AUTOMOTIVE INC., St. Louis, Missouri

Basic Components of a Disc Brake System


Rotor
Outboard Pad
Front Disc or Rotor Assembly
Inboard Pad
Caliper
Hose
Piston "O" Ring
Master Cylinder
Power Booster
Rear Drum or Disc Brake Assembly
To Front Brakes
To Rear Brakes
Hose
Lines
Pressure Differential Valve
Proportioning Valve
Combination Valve
Metering Valve
Caliper Assembly
(See detail above)
Hose

Basic Components of a Body System


Outer Roof Rail Assembly
Windshield Header Assembly
Rear Window Panel Assembly
Instrument Panel Assembly
Rear Compartment Deck Lid
Rear End Panel Assembly
Rear Quarter Panel Assembly
Shroud and Dash Assembly
Door Assembly
Under Body Assembly
Rocker Panel Assembly

PARTS AND SYSTEMS IDENTIFICATION
UNIT V

ASSIGNMENT SHEET #1--SOLVE PROBLEMS CONCERNING BASIC ENGINE SERVICE NEEDS

Directions: Use the ASIA guidelines on page 8 of the *Counterman's Handbook* to solve the following problems:

A. What four items of information are required to recommend to a customer the proper oil filter?

1. ______________________________
2. ______________________________
3. ______________________________
4. ______________________________

B. What grade motor oil do most late model automobiles require (excluding diesel engines)? ______________________________

C. By what two categories are motor oils graded?

1. ______________________________
2. ______________________________

D. What is the function of an oil absorber? ______________________________

E. What are two functions of special drain plugs?

1. ______________________________
2. ______________________________

F. What tools and equipment are required to properly change the oil in an automobile?

1. ______________________________
2. ______________________________
3. ______________________________
4. ______________________________
5. ______________________________
6. ______________________________

G. Since most basic engine services cannot be carried out in a single step with but a single part, what genuine service can a counterperson offer a customer?

____

PARTS AND SYSTEMS IDENTIFICATION
UNIT V

ASSIGNMENT SHEET #2--SOLVE PROBLEMS CONCERNING BASIC CYLINDER HEAD AND VALVE SERVICE

Directions: Use the ASIA guidelines on page 9 of the *Counterman's Handbook* to solve the following problems:

A. What is the basic difference between intake and exhaust valves?

____

B. Why are replacements required for valve springs?

____

C. What are spring shims used with and what are they used for?

____

D. When should valve guides be installed?

____

E. What are the parts included in valve operating gear?

____

F. Should valve stem oil seals be installed only when valves are replaced (explain your answer)? ______________________________

____

G. Why are gasket sealing compounds important? ______________________

____

H. Which gaskets should be replaced during a valve job? ____________________

I. As a counterperson, what tools and equipment would you recommend to a customer planning to do a valve job? ______________________________

____

____

PARTS AND SYSTEMS IDENTIFICATION
UNIT V

ASSIGNMENT SHEET #3--SOLVE PROBLEMS CONCERNING BASIC RING AND BEARING SERVICE

Directions: Use the guidelines on page 10 of the *Counterman's Handbook* to solve the following problems:

A. How should piston ring sets be selected? ____________________

____

B. How should pistons be selected? ____________________

____

C. How should bearings for connecting rods and mains be selected? ____________

____

D. Is it true that bearings can be made only from steel (explain your answer)? ________

____

E. Since gaskets and oil seals are sold in sets and the sets may contain extra gaskets that are not used, it appears that a customer may be wasting money be buying a complete set. If this statement is true, leave the answer space blank; if the statement is not true, give reasons. ____________________

____

F. As a counterperson, what tools and equipment would you recommend to a customer planning to replace pistons and bearings? ____________________

____

PARTS AND SYSTEMS IDENTIFICATION
UNIT V

ASSIGNMENT SHEET #4--SOLVE PROBLEMS CONCERNING ADDITIONAL BASIC ENGINE SERVICES

Directions: Use the ASIA guidelines on page 11 of the *Counterman's Handbook* to solve the following problems:

A. What are two characteristics of worn out timing gears/chains?

____

B. Should timing gears/chains be replaced in sets whenever possible? ____________

C. What related parts should be included in timing gears/chains replacement?

____

D. What is another name for expansion plugs? ____________________

E. What is the function of expansion plugs? ____________________

____

F. List three things that can lead to a need for the replacement of expansion plugs.

____

G. How are replacement expansion plugs selected?

____

H. As a counterperson, what tools and equipment would you recommend to a customer planning timing gears/chains replacement or expansion plug replacement?

____

PARTS AND SYSTEMS IDENTIFICATION
UNIT V

ASSIGNMENT SHEET #5--SOLVE PROBLEMS CONCERNING BASIC FUEL SYSTEM SERVICES

Directions: Use the ASIA guidelines on page 11 of the *Counterman's Handbook* to solve the following problems:

A. Describe the structure and purpose of a fuel tank cap.

____

____

B. What could happen if the fuel cap valves failed?____________________

____

C. What is the basic rule for fuel tank cap selection?____________________

____

D. As a counterperson, what tools and equipment would you recommend to a customer planning to work on an automobile fuel system?

____

____

PARTS AND SYSTEMS IDENTIFICATION
UNIT V

ASSIGNMENT SHEET #6--SOLVE PROBLEMS CONCERNING BASIC CARBURETOR AND PUMP SERVICES

Directions: Use the ASIA guidelines on page 12 of the *Counterman's Handbook* to solve the following problems:

A. Why are fuel lines made of flexible hoses?________________________________

____

B. What two things can happen when a fuel line hose gets too old?

____

____

C. What are the two basic types of fuel pumps?________________________________

D. The best thing for a fuel pump that is not working is to overhaul the unit. If this statement is true, leave the answer space blank; if the statement is false, indicate a better way to solve the problem.

____

E. What is the basic rule for selecting a fuel pump and why should that rule be followed?

____

____

F. At what three places may fuel filters be located?

____

____

G. What is the basic rule for a fuel filter replacement?________________________________

____

H. What type of fuel filter can be installed directly in the fuel line?

____

I. What kind of engines often use two or more fuel filters?________________________________

PARTS AND SYSTEMS IDENTIFICATION
UNIT V

ASSIGNMENT SHEET #7--SOLVE PROBLEMS CONCERNING BASIC COOLING SYSTEM SERVICE

Directions: Use the ASIA guidelines on pages 14 and 15 of the *Counterman's Handbook* to solve the following problems:

A. How are thermostats specified and how should they be used?____________________

____

B. How are pressure caps rated and what happens if a pressure cap fails?

____

____

C. What else should be recommended to a customer planning to replace a water pump?

____

D. As a counterperson, what should you recommend to a customer planning to replace just one worn hose?____

____

E. As a counterperson, what should you recommend to a customer concerning old hose clamps?____

____

F. As a counterperson, what should you recommend to a customer that uses his or her car to tow a trailer?____

____

G. Why is summer/winter coolant an essential element in a cooling system?__________

____

H. How often should summer/winter coolant be changed?______________________

____

PARTS AND SYSTEMS IDENTIFICATION
UNIT V

ASSIGNMENT SHEET #8--SOLVE PROBLEMS CONCERNING BASIC IGNITION SYSTEM SERVICES

Directions: Use the ASIA guidelines on page 13 of the *Counterman's Handbook* to solve the following problems:

A. How are points selected and what else is sometimes necessary for point selection?

B. What else is often replaced at the same time as the centrifugal advance system?

C. What is the basic rule for selecting spark plugs and how should they generally be replaced?

D. What would a defect in a distributor cap or a rotor cause?

E. How are spark plug wires generally replaced?

F. What element related to the function of an ignition coil is easily overlooked and what is its significance?

G. What are the basic differences between an electronic ignition system and a standard ignition system?

What are similarities of the two systems?

H. When is it especially true that a distributor should be replaced?

PARTS AND SYSTEMS IDENTIFICATION
UNIT V

ASSIGNMENT SHEET #9--SOLVE PROBLEMS CONCERNING ELECTRICAL SYSTEM SERVICES

Directions: Use the ASIA guidelines on pages 16 and 17 of the *Counterman's Handbook* to solve the following problems:

A. As a counterperson you are faced with the following problem: a customer needs a replacement battery immediately, but the only batteries in stock have capacities too large or too small for the car; based on the customer's urgent need, which battery would you recommend and why?

____

B. Which is more practical for a regulator, repair, or replacement?

____

C. Most newer cars are not built with generators. As a counterperson, would you need to know anything about generators, and if so, why? ____________________

____

D. What is a basic rule about replacement battery cables? ____________________

____

E. How do mechanics generally treat malfunctioning starter motors?

____

F. As a counterperson, you are handed a light bulb which a customer wants replaced; there is a number on the burned out bulb; should you give the customer a replacement bulb based only on that information? ____________________

____

G. As a counterperson you know that a customer is planning extensive work on a car's electrical system? What, other than basic items, could you recommend to the customer? ____________________

____

____

PARTS AND SYSTEMS IDENTIFICATION
UNIT V

ASSIGNMENT SHEET #10--SOLVE PROBLEMS CONCERNING BASIC EXHAUST AND EMISSION SYSTEM SERVICES

Directions: Use the ASIA guidelines on page 15 of the *Counterman's Handbook* to solve the following problems:

A. What is the most important reason for replacing leaking mufflers and exhaust pipes?

____

____

B. When a customer asks for one exhaust system replacement part, what should a good counterperson recommend? ______________________________

____

C. Why do replacement mufflers and pipes sometimes not exactly duplicate original equipment? ______________________________

____

D. What is the best rules for selecting replacement mufflers and exhaust pipes?

____

E. What is the best advice a customer can be given concerning clamps used with exhaust systems? ______________________________

____

F. What is the rule for catalytic converters that fail? ______________________________

PARTS AND SYSTEMS IDENTIFICATION
UNIT V

ASSIGNMENT SHEET #11--SOLVE PROBLEMS CONCERNING BASIC DRIVE TRAIN SYSTEM SERVICES

Directions: Use the ASIA guidelines on pages 17 and 18 of the *Counterman's Handbook* to solve the following problems:

A. What particular attention should be paid to a flywheel when a clutch is replaced?

____

B. What items would be considered routine service parts for automatic transmissions?

____

C. What items would be considered routine service for manual transmissions?

____

D. Are manual transmissions normally replaced or overhauled? ____________________

E. What is the biggest demand for drive shaft repairs?

____

F. What service parts are usually needed for repair of rear axle assemblies?

____

G. When a customer buys a wheel bearing, what would a good counterperson recommend that the customer might also need?

____

PARTS AND SYSTEMS IDENTIFICATION
UNIT V

ASSIGNMENT SHEET #12--SOLVE PROBLEMS CONCERNING BASIC SUSPENSION AND STEERING SYSTEM SERVICES

Directions: Use the ASIA guidelines on page 19 of the *Counterman's Handbook* to solve the following problems:

A. What are the basic categories of shock absorbers?

____

B. What types of shock absorbers are available for vehicles which must carry heavy loads or pull trailers? ______________________________

C. What are some common parts needed for repairing a power steering unit that is leaking? ______________________________

____

D. Why does the replacement of worn steering and suspension parts save the car owner more than the cost of parts? ______________________________

____

E. What other items would a good counterperson recommend to a customer buying power steering parts? ______________________________

____

PARTS AND SYSTEMS IDENTIFICATION
UNIT V

ASSIGNMENT SHEET #13--SOLVE PROBLEMS CONCERNING BASIC BRAKING SYSTEM SERVICES

Directions: Use the ASIA guidelines on pages 20 and 21 of the *Counterman's Handbook* to solve the following problems:

A. What is the most common procedure for repairing worn brake shoes?

B. How are brake shoes usually supplied and why are they supplied in that manner?

C. Why must both brakes be relined on the same axle?

D. What are the replacement requirements for worn brake shoes on vehicles with drum brakes all the way around?

E. What are the replacement requirements for worn brake shoes on vehicles with disc brakes at the front and drum brakes at the rear?

F. What are the basic items of brake shoe hardware required when worn brake shoes are replaced?

G. What are the basic requirements for replacement hoses used in brake system repairs?

H. In what form is tubing often available and how is it installed?

I. What repair procedure is usually recommended for defective valves?

J. What do conscientious mechanics insist on in regard to wheel cylinders and calipers with every brake job?

ASSIGNMENT SHEET #13

K. For what reasons are the demand for replacement cylinders greater than the demand for parts to repair worn master cylinders?

____

____

L. For what reasons would a customer probably prefer a new or remanufactured power brake booster as opposed to repairing a worn out booster? ________________

____

M. What is the basic rule concerning drum and disc machining?

____

PARTS AND SYSTEMS IDENTIFICATION
UNIT V

ASSIGNMENT SHEET #14--SOLVE PROBLEMS CONCERNING BASIC BODY SYSTEM PARTS AND SUPPLIES

Directions: Use the ASIA guidelines on page 22 of the *Counterman's Handbook* to solve the following problems:

A. If a customer purchases a sponge, a brush, and a cleaner for the specific purpose of removing road tar from a car, what would a good counterperson recommend in addition to these items?

____

B. What sort of materials might be popular in areas where heavy snows demand the use of road salt that can quickly deteriorate car finishes and body parts?

____

C. What are some items body shop customers would probably need often?

____

D. Since the popularity of car care items varies by geographic area, what should a good counterperson learn? ____________________

____

PARTS AND SYSTEMS IDENTIFICATION
UNIT V

ANSWERS TO ASSIGNMENT SHEETS

Assignment Sheet #1

A. 1. Vehicle make
  2. Model
  3. Engine
  4. Year

B. SE

C. 1. SAE viscosity
  2. Service characteristics

D. To clean up oil spills

E. 1. To replace standard plugs
  2. To repair damaged drain hole threads

F. 1. Oil filter wrenches
  2. Oil drain pans
  3. Drain plug wrenches
  4. Oil can spouts
  5. Oil dispensers
  6. Oil suctions guns

G. To acquire additional parts, supplies, and tools

Assignment Sheet #2

A. They are made of different materials to handle their specific working conditions

B. To restore full spring pressure which helps prevent premature burning

C. They are used with spring valves to compensate for dimensional changes due to machining

D. When original parts are worn beyond restoration limits

E. Valve lifters, rockers, push rods, and all of the associated parts

ANSWERS TO ASSIGNMENT SHEETS

F. No; they may be installed even when no burned valve conditions exist and no other work is being done on the valves

G. To ensure that a gasketed joint will not leak and that a gasket will not slip during assembly

H. All old gaskets should be replaced

I. Tools such as torque wrenches, micrometers, and feeler gauges may be recommended, but working with a valve spring compressor, refacer, and grinder/installer requires professional work in a shop

Assignment Sheet #3

A. According to the ring maker's recommendations to suit the engine's operating conditions and the sizes to which the cylinders may have been machined to restore a true, round bore; they must also match the pistons

B. To suit the application as well as the bore size; if piston pins are required, these must be fitted to the pistons and to the small end of the connecting rods

C. To match the sizes of the crankshaft bearing journals to achieve proper oil clearance

D. No; they may be aluminum, babbit, copper alloy, or combinations of all these

E. Selling gaskets and oil seals in sets allows the economical distribution of a minimum variety of packages to accommodate a large variety of applications; this reduces cost and minimizes stocking problems

F. Piston ring compressors, cylinder ridge reamers, piston groove cleaners, thread restoring kits, plastigage, and bearing remover/installer

Assignment Sheet#4

A. They become noisy and allow timing to become inaccurate

B. Yes

C. Timing cover gaskets and seals

D. Freeze plugs

E. They seal openings needed to manufacture the block

F. These plugs may rust out, be removed to perform service, or they may be damaged by freezing

G. They must match the original parts in size and shape

H. Gear pullers, expansion plug drivers, and seal drivers

ANSWERS TO ASSIGNMENT SHEETS

Assignment Sheet #5

A. The cap contains both pressure and vacuum valves to control pressure with the fuel tank

B. The tank may collapse and certainly the fuel flow will be cut off

C. The cap must match specifications for the car

D. Tubing cutters, tubing benders, fuel pressure gauges, vacuum gauges, carburetor gauges, and fitting wrenches

Assignment Sheet #6

A. Movement in the system would crack a rigid connecting line

B. They may shed internal covering which blocks the flow of fuel, or they develop leaks which let fuel leak out and air leak into the system causing fuel starvation

C. Mechanical or electrical

D. The accepted practice is to install a replacement, either new or remanufactured

E. Select the unit recommended in the catalog because fuel pumps may look identical but have different pressure settings for different cars

F. Directly on the fuel pump, between the pump and the carburetor, or at the carburetor fuel inlet

G. The replacement must match the original filter's features

H. A universal type filter

I. Diesel engines

Assignment Sheet #7

A. Thermostats are specified by opening temperature and should be used according to catalog recommendations

B. Pressure caps are rated at a specific pressure for each vehicle; a cap that fails will let the engine boil over at too low a temperature

C. Suggest the customer consider a new fan clutch at the same time

D. Replace all hoses including those for the heater

E. It's false economy to use worn hose clamps on new hoses; suggest new clamps with every hose sale

F. Heavy duty add-on parts to enhance the vehicle's ability to cope with the added loads of trailer towing

ANSWERS TO ASSIGNMENT SHEETS

G. It protects the system from freezing in the winter and raises the boiling point for troublefree summer driving

H. At least once every two years

Assignment Sheet #8

A. Points are selected on the basis of engine make, model, and year, and sometimes it is necessary to refer to the distributor number due to the use of more than one distributor type in one model year

B. The distributor cam

C. Never guess; always refer to the plug maker's catalog and use catalog recommendations; plugs should generally be replaced in sets

D. Engine missing or failure to start

E. In sets

F. The ballast resistor which controls the flow of current to the coil to avoid overheating and point burning

G. The electronic system does not have breaker points and cam, but all other electronic system parts are the same as parts in a standard system

H. When the shaft and bearings show signs of wear

Assignment Sheet #9

A. Recommend the battery that is too big; a customer should never choose a battery too small for the vehicle

B. Replacement

C. Yes, many older cars still have generators as charging systems

D. They should be heavy enough for the task; light duty cables will not allow enough current to flow for cranking large engines

E. The prefer to install replacement units rather than repairing malfunctioning units

F. No, rely on the catalog

G. Wire, electrical tape, terminals, lenses, sockets for lamps, switches, fuse holders, and other needs indicated by your knowledge of the problem

ANSWERS TO ASSIGNMENT SHEETS

Assignment Sheet #10

A. Safety; exhaust leaks can kill people in a car

B. That is is more economical, as well as safer, to replace all questionable parts at one time

C. Because original systems may be welded into one piece and replacement parts are usually supplied in separate pieces

D. Follow the catalog carefully

E. Always advise using new clamps

F. They must be replaced

Assignment Sheet #11

A. It must often be machined to eliminate scoring due to wear

B. Changing filters and fluids, replace modulators, and replacing leaking seals and gaskets

C. Draining and refilling with new lubricant

D. Overhauled

E. Universal joint kits

F. Pinion oil seals, rear axle seals, rear wheel bearings, and various gaskets

G. An oil seal

Assignment Sheet #12

A. Heavy-duty shocks and standard shocks

B. Spring shocks and air shocks

C. New fluid hoses, new or remanufactured power steering cylinders and valves, or a power steering pump

D. It could avoid the prospects of an accident because of an unsafe car, and can eliminate rapid tire wear

E. Steering fluid, hoses, drive belts, and whatever else the catalog indicates the system needs

ANSWERS TO ASSIGNMENT SHEETS

Assignment Sheet #13

A. To install new or relined shoes

B. In axle sets with four shoes to a box, two for each wheel

C. To preserve balanced braking action

D. A total of two sets, or eight shoes

E. One set of four brake pads and one set of four shoes

F. Pull-back springs, brake shoe holdown springs, self adjuster mechanisms, and manual adjusting devices

G. They must have the correct end fittings and the length must correspond to the catalog recommendations

H. In lengths with fittings pre-installed; it is bent to shape by the installer

I. Replacement; they can seldom be repaired

J. That all wheel cylinders and calipers be cleaned and that all rubber sealing parts are replaced

K. The complex mechanism found in tandem master cylinders may be too difficult for some inexperienced customers to understand and overhaul

L. The tools and equipment needed to repair a power brake booster are not found in many service shops

M. Neither drums nor discs can be machined beyond specific limits or they will be too weak for reliable operation

Assignment Sheet #14

A. Beauty care items such as wax, chrome cleaner, carpet cleaner, etc.

B. Rustproofing materials

C. Everything from masking tape, putty, paint, thinners, respirators, rubbing compounds and polishes, to expoxy repair materials

D. The materials that are most important in the area

PARTS AND SYSTEMS IDENTIFICATION
UNIT V

NAME ________________________________

TEST

1. Match the terms on the right with their correct definitions.

_____a. A machine that converts a fuel into heat energy which produces mechanical force and motion

_____b. Supplies a combustible mixture of air and fuel to the engine cylinders to meet all driving conditions

_____c. Keeps the engine at its most efficient operating temperature during all engine speeds and driving conditions

_____d. Provides a high voltage spark to ignite the fuel-air mixture in the combustion chamber

_____e. Converts electrical power from the battery into mechanical energy to crank the engine

_____f. Recharges the battery and maintains a supply of electrical current to meet the operating needs of the automobile

_____g. Conducts burned gases away from the engine and passenger compartment through catalytic converter, muffler, and pipes

_____h. Devices on an automobile to control air pollution

_____i. Delivers the power developed by the engine through clutch to the transmission drive shaft, differential to the wheels for motion

_____j. Mounted to the framework through a series of linkages and springs to allow the wheels to move up and down on rough roads while the rest of the vehicle remains fairly steady

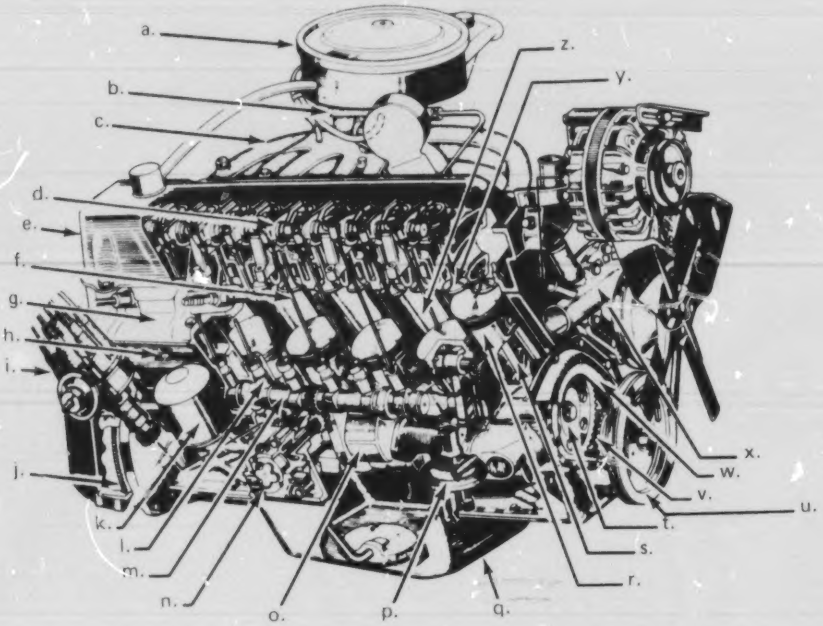
_____k. Allows control of direction of the vehicle through a gearbox and linkage connected to the front wheels

_____l. Method by which an operator slows or stops a vehicle

_____m. Outer shell that provides protected area for auto components, people, luggage, etc.

1. Starting system
2. Brake system
3. Drive train
4. Emission control system
5. Cooling system
6. Suspension system
7. Engine
8. Ignition system
9. Body system
10. Exhaust system
11. Charging system
12. Steering system
13. Fuel system

2. Identify the basic components of an automobile engine.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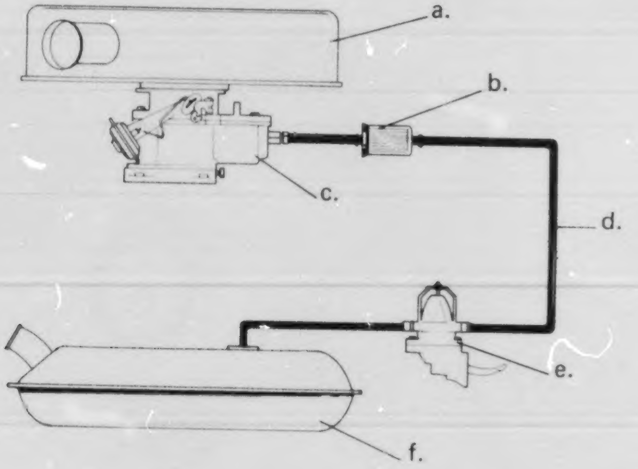
3. Identify the basic components of a fuel system.

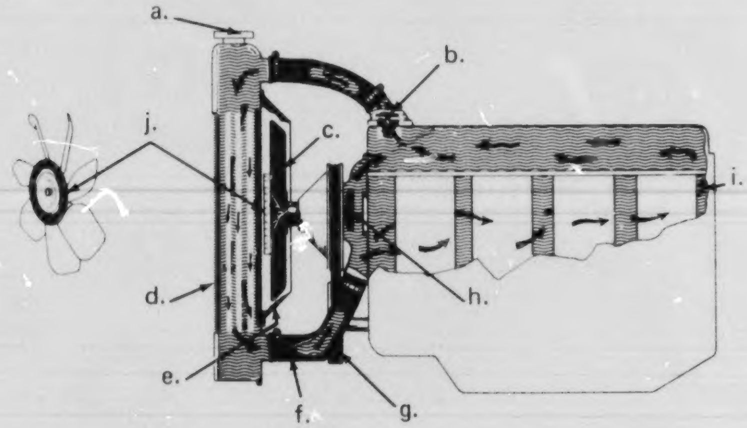


a. ______________________ d. ______________________

b. ______________________ e. ______________________

c. ______________________ f. ______________________

4. Identify the basic components of a cooling system.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a. ______________________ f. ______________________

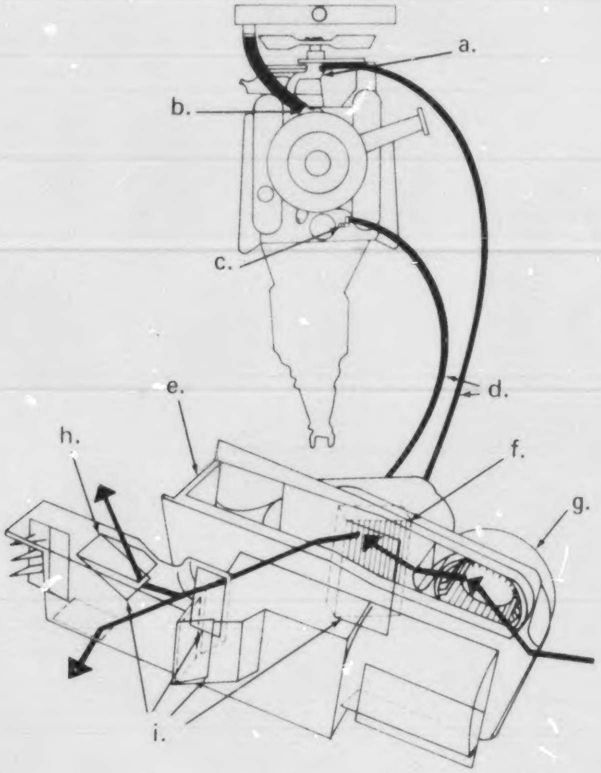
b. ______________________ g. ______________________

c. ______________________ h. ______________________

d. ______________________ i. ______________________

e. ______________________ j. ______________________

5. Identify the basic components of a heating system.



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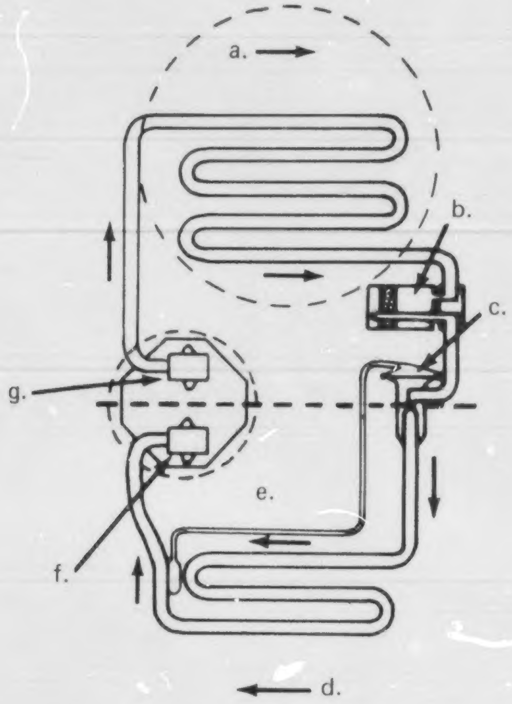
i. ______________________________

6. Identify the basic components of an air conditioning system.



a. __________________________

b. __________________________

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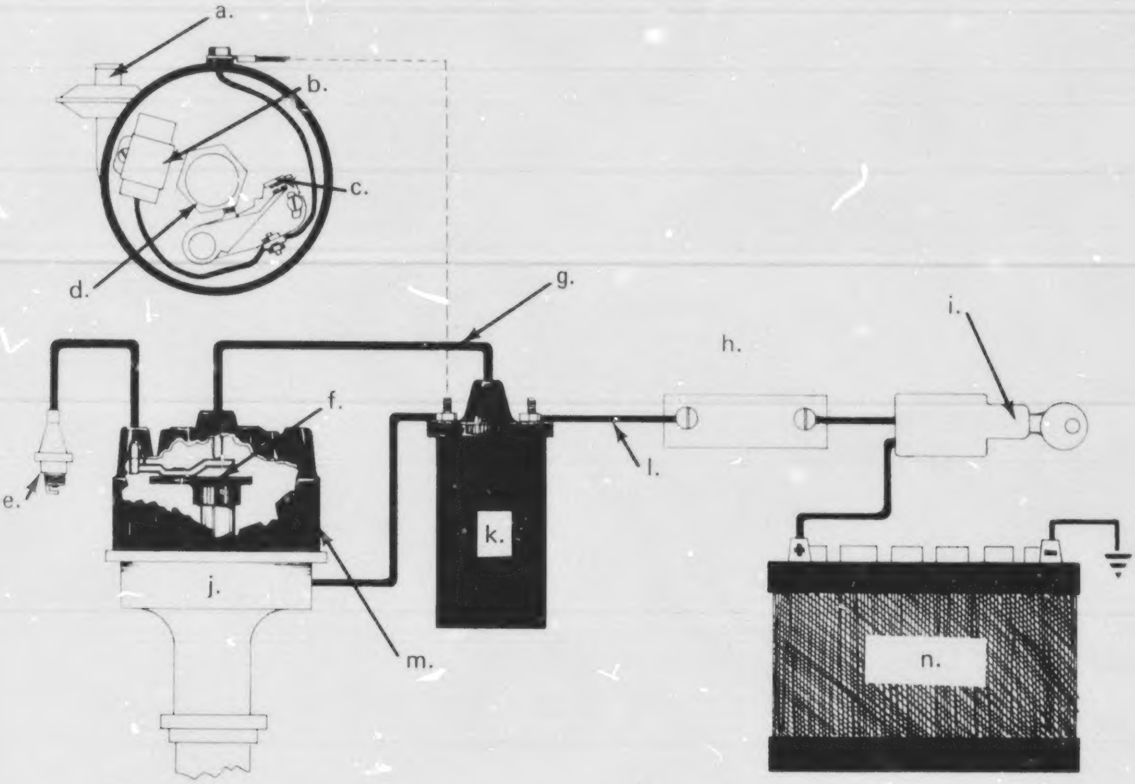
7. Identify the basic components of a conventional ignition system.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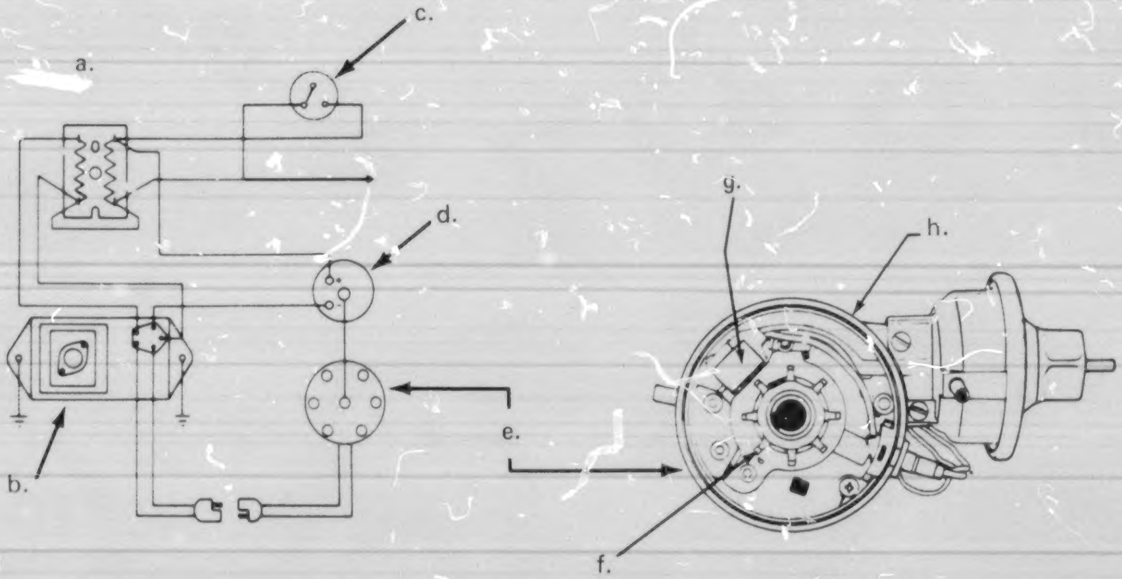
8. Identify the basic components of an electronic ignition system.



a. ____________________

b. ____________________

c. ____________________

d. ____________________

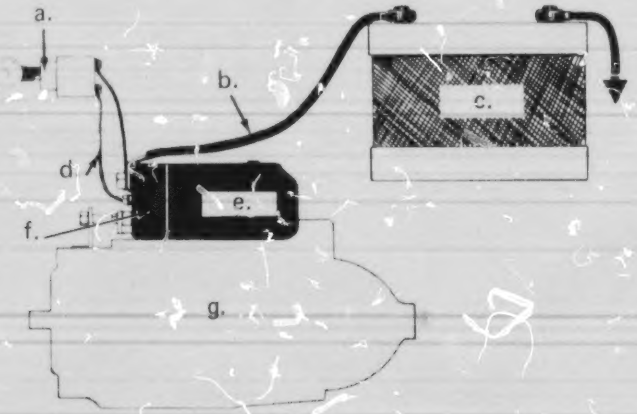
e. ____________________

f. ____________________

g. ____________________

h. ____________________

9. Identify the basic components of a starting system.



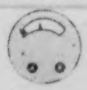
a. ______________________ e. ______________________

b. ______________________ f. ______________________

c. ______________________ g. ______________________

d. ______________________

10. Identify the basic components of a charging system.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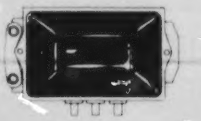
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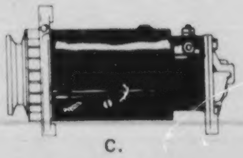
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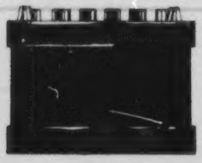
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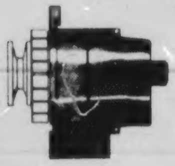
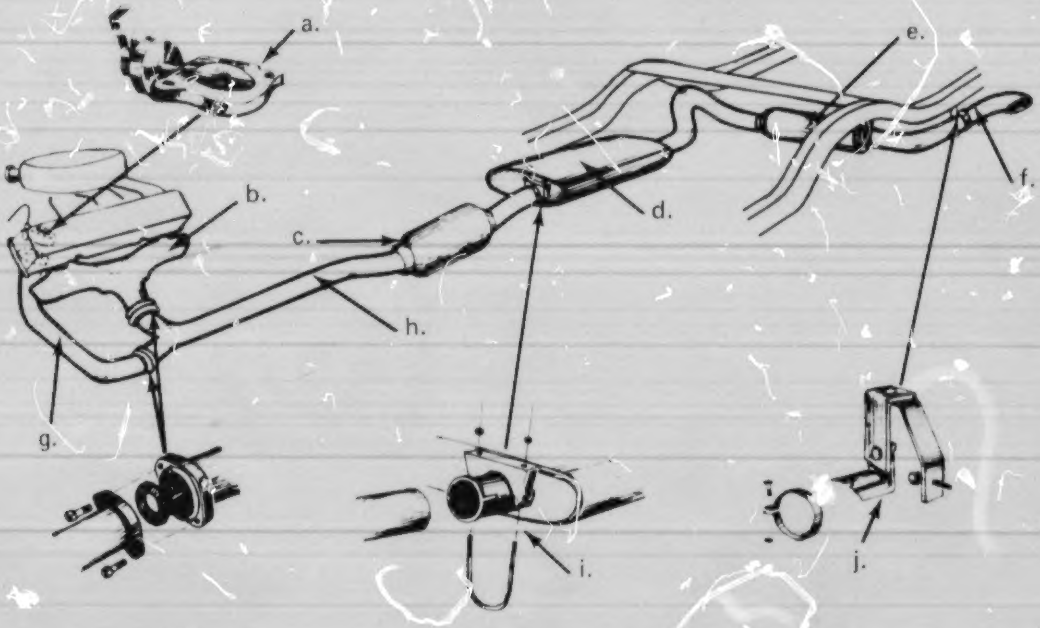

e.

a. ______________________ d. ______________________

b. ______________________ e. ______________________

c. ______________________

11. Identify the basic components of an exhaust system.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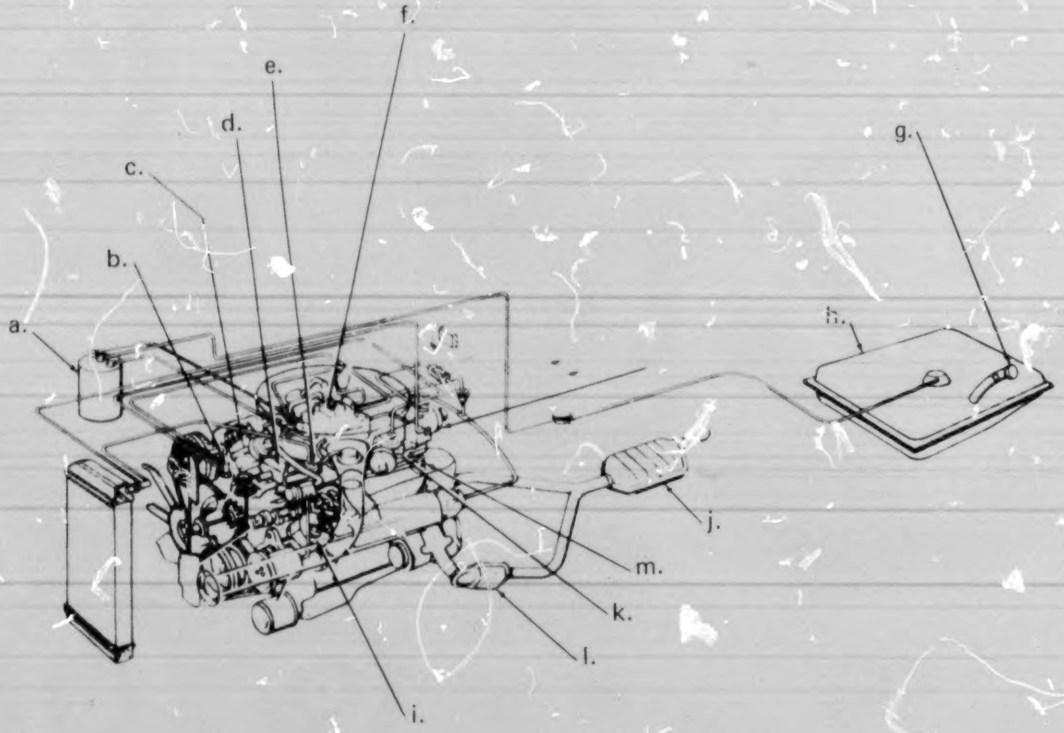
12. Identify the basic components of an emission control system.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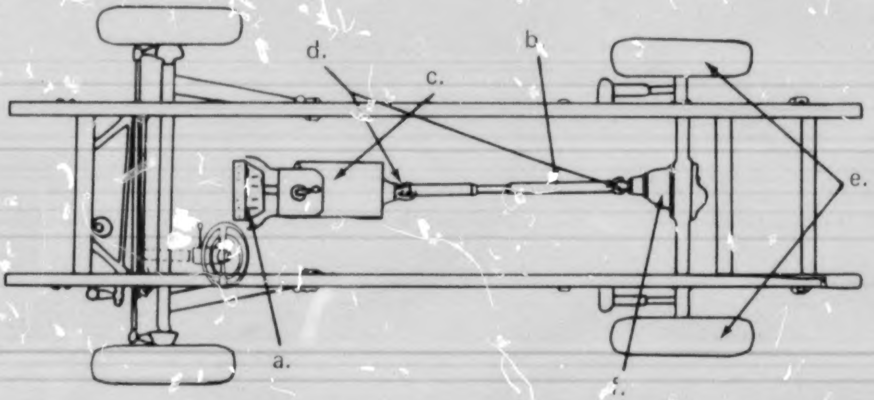
13. Identify the basic components of a drive train.



a. ______________________

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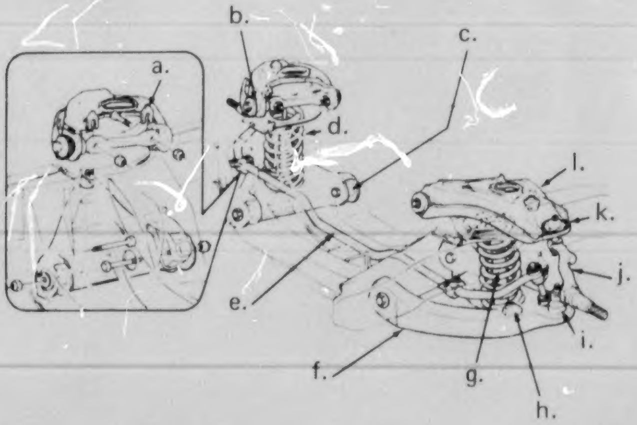
14. Identify the basic components of a front suspension system.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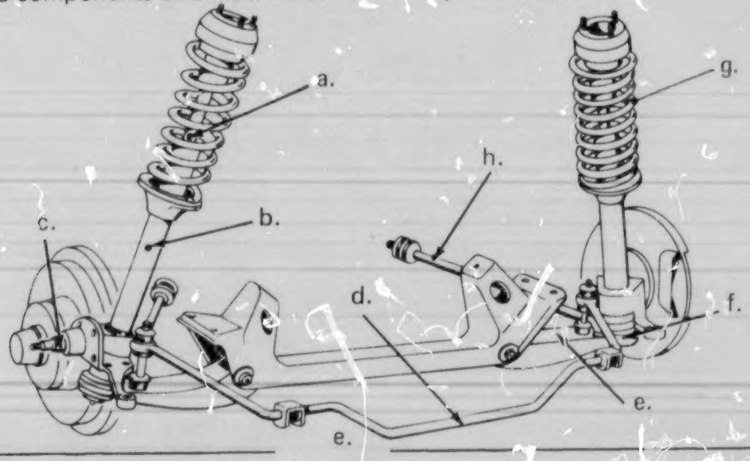
15. Identify the basic components of a MacPherson strut suspension system.



a. ______________________________

b. ______________________________

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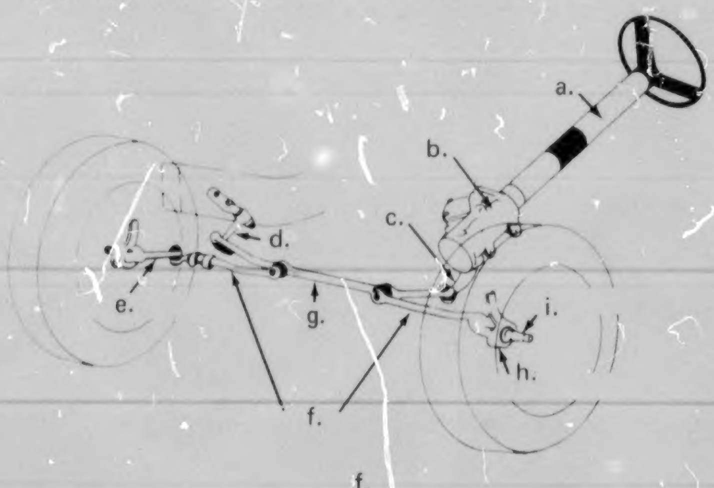
16. Identify the basic components of a conventional steering system.



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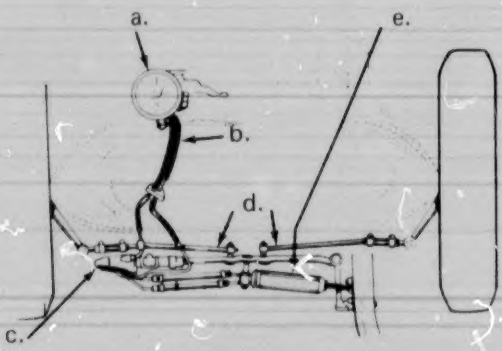
k. ______________________________

17. Identify the basic components of a power steering system.



a. ______________________

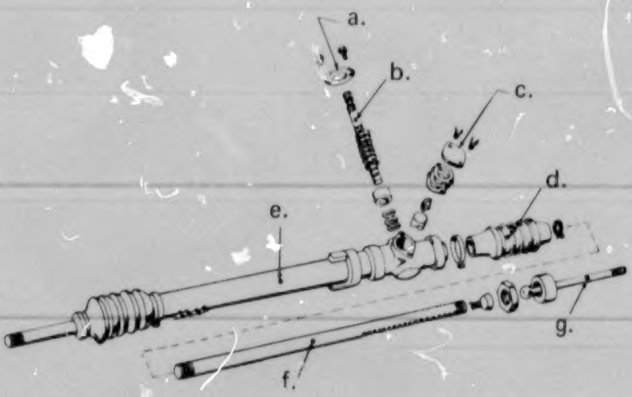
b. ______________________

c. ______________________

d. ______________________

e. ______________________

18. Identify the basic components of a rack and pinion steering system.



a. ______________________

b. ______________________

c. ______________________

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e. ______________________

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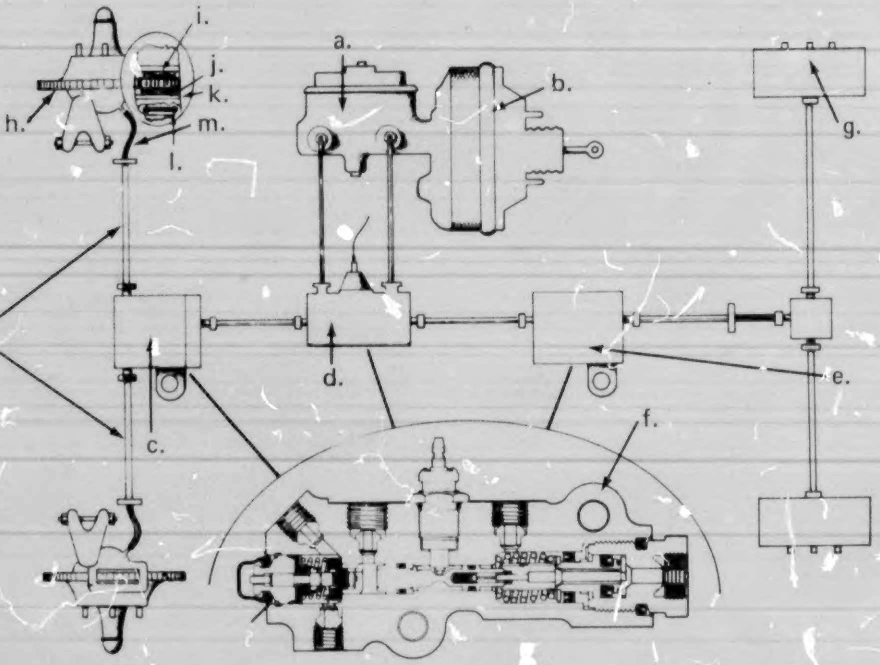
g. ______________________

h. ______________________

19. Identify the basic components of a disc brake system.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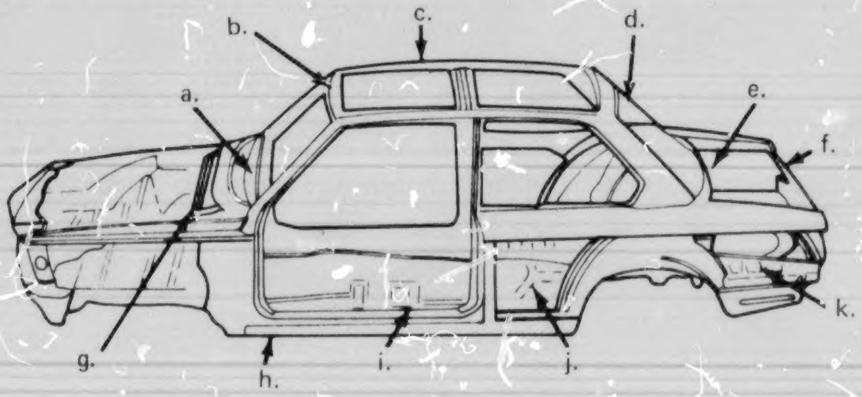
20. Identify the basic components of a body system.



a. ____________________	g. ____________________
b. ____________________	h. ____________________
c. ____________________	i. ____________________
d. ____________________	j. ____________________
e. ____________________	k. ____________________
f. ____________________	

21. Match basic systems on the right with the tools and supplies needed to repair them. (NOTE: Some terms on the right may have to be used more than once.)

_____ a. Starter switch	1. Engine
_____ b. Regulator	2. Fuel System
_____ c. Oil filter	3. Cooling system
_____ d. Shock absorber	4. Ignition system
_____ e. Spark plugs	5. Starting system
_____ f. Piston	6. Charging system
_____ g. Undercoating compounds	7. Exhaust system
_____ h. Heat sink	8. Emission system
_____ i. Brake shoes	9. Drive train
_____ j. Paint	10. Suspension system
_____ k. Thermostat	11. Steering system
_____ l. Points and condenser	

______m. PCV valve

______n. Muffler

______o. Clutch pilot bearing

______p. Tie rods

______q. Water pump

______r. Fuel pump

12. Brake system

13. Body system

22. Solve problems concerning basic engine service needs.

23. Solve problems concerning basic cylinder head and valve service.

24. Solve problems concerning basic ring and bearing service.

25. Solve problems concerning additional basic engine services.

26. Solve problems concerning basic fuel system services.

27. Solve problems concerning basic carburetor and pump services.

28. Solve problems concerning basic cooling system service.

29. Solve problems concerning basic ignition system services.

30. Solve problems concerning electrical system services.

31. Solve problemss concerning basic exhaust and emission system services.

32. Solve problems concerning basic drive train system services.

33. Solve problems concerning basic suspension and steering system services.

34. Solve problems concerning basic braking system services.

35. Solve problems concerning basic body system parts and supplies.

(NOTE: If these activities have not been accomplished prior to the test, ask your instructor when they should be completed.)

PARTS AND SYSTEMS IDENTIFICATION
UNIT V

ANSWERS TO TEST

1. a. 7
   b. 13
   c. 5
   d. 8
   e. 1
   f. 11
   g. 10
   h. 4
   i. 3
   j. 6
   k. 12
   l. 2
   m. 9

2. a. Air filter
   b. Carburetor
   c. Intake manifold
   d. Rocker arms
   e. Valve cover
   f. Push rods
   g. Cylinder head
   h. Cylinder block
   i. Distributor
   j. Flywheel
   k. Oil filter
   l. Valve lifter
   m. Camshaft
   n. Oil pump
   o. Crankshaft
   p. Fuel pump
   q. Oil pan
   r. Piston
   s. Connecting rod
   t. Camshaft gear
   u. Vibration dampener
   v. Crankshaft gear
   w. Camshaft gear cover
   x. Water pump
   y. Valve
   z. Cylinder

3. a. Air cleaner
   b. Fuel filter
   c. Carburetor
   d. Fuel line
   e. Fuel pump
   f. Fuel tank

4. a. Pressure cap
   b. Thermostat
   c. Fan
   d. Radiator
   e. Shroud
   f. Radiator hose
   g. V-belt
   h. Water pump
   i. Water jackets
   j. Fan clutch

5. a. Water pump
   b. Thermostat
   c. Water control valve
   d. Heater hoses
   e. Heater plenum
   f. Heater core
   g. Blower
   h. Defroster
   i. Control system

6. a. Condenser
   b. Receiver-drier
   c. Expansion valve
   d. Evaporator
   e. Compressor
   f. Low side service fitting
   g. High side service fitting

7. a. Spark advance mechanism
   b. Condenser
   c. Contact points
   d. Breaker cam
   e. Spark plug
   f. Rotor
   g. Secondary ignition cable
   h. Primary resistance unit
   i. Ignition switch
   j. Distributor
   k. Ignition coil
   l. Primary ignition wire
   m. Distributor cap
   n. Battery

8. a. Resistor unit
b. Control unit
c. Ignition switch
d. Ignition coil
e. Distributor
f. Armature
g. Magnetic pickup assembly
h. Distributor housing

9. a. Key switch
b. Battery cable
c. Battery
d. Small gauge switch wire
e. Solenoid
f. Starter switch
g. Starter

10. a. Ammeter
b. Regulator
c. Generator
d. Battery
e. Alternator

11. a. Manifold heat control valve
b. Exhaust manifold
c. Catalytic converter
d. Muffler
e. Resonator
f. Tail pipe
g. Crossover pipe
h. Exhaust pipe
i. Pipe clamps
j. Pipe hangers

12. a. Charcoal canister
b. Coolant control engine vacuum switch
c. Distributor
d. Intake manifold
e. EGR control valve
f. Carburetor
g. Pressure-vacuum relief filler cap
h. Fuel tank
i. Air pump
j. Catalytic converter
k. Electronic spark control computer
l. Manifold converter
m. PCV valve

13. a. Clutch
b. Drive shaft
c. Transmission
d. U-joints
e. Wheels
f. Differential or transaxle

14. a. Adjusting shims
b. Upper control arm inner bushings
c. Lower control arm inner bushings
d. Coil spring
e. Stabilizer bar
f. Lower control arm
g. Shock absorber
h. Rubber bumper
i. Lower ball joint
j. Steering knuckle
k. Upper ball joint
l. Upper control arm

15. a. Shock
b. Strut
c. Spindle
d. Sway bar
e. Control arm
f. Ball joint
g. Coil spring
h. Strut rod

16. a. Steering column
b. Steering gear
c. Pitman arm
d. Idler arm
e. Steering arm
f. Tie rods
g. Center or relay link
h. Steering knuckle
i. Steering spindle bolt

17. a. Pump assembly
b. Fluid line
c. Control valve
d. Tie rods
e. Power cylinder

18. a. Pinion gear preload adjustment
b. Pinion gear
c. Rack lash adjustment
d. Bellows
e. Housing
f. Rack
g. Inner tie rod end

19. a. Master cylinder
b. Power booster
c. Metering valve
d. Pressure differential valve
e. Proportioning valve
f. Combination valve
g. Rear drum or disc brake assembly
h. Front disc or rotor assembly
i. Outboard pad
j. Inboard pad
k. Caliper assembly
l. Piston "o" ring
m. Hose
n. Lines

20. a. Instrument panel assembly
b. Windshield header assembly
c. Outer roof rail assembly
d. Rear window panel assembly
e. Rear compartment deck lid
f. Rear end panel assembly
g. Shroud and dash assembly
h. Rocker panel assembly
i. Door assembly
j. Under body assembly
k. Rear quarter panel assembly

21. a. 5
b. 6
c. 1
d. 10
e. 4
f. 1
g. 13
h. 6
i. 12
j. 13
k. 3
l. 4
m. 8
n. 7
o. 9
p. 11
q. 3
r. 2

22. Items 22 through 35 evaluated to the satisfaction of the instructor

STOCKING, SHIPPING, AND RECEIVING
UNIT VI

UNIT OBJECTIVE

After completion of this unit, the student should be able to identify forms used for shipping and receiving merchandise, check in and stock parts, fill and pack an order, and define methods of payment. This knowledge will be evidenced by correctly performing the procedures outlined in the job sheets and by scoring 85 percent on the unit test.

SPECIFIC OBJECTIVES

After completion of this unit, the student should be able to:

1. Match terms related to stocking, shipping, and receiving with their correct definitions.
2. Select true statements concerning the organization of parts bins.
3. List forms of transportation used in shipping parts.
4. Identify forms used in shipping parts.
5. Define methods of payment used in shipping and receiving parts.
6. Select true statements concerning the procedure for receiving shipments.
7. Arrange in order the steps for filling and packing an order.
8. Demonstrate the ability to:
    - a. Arrange a parts bin.
    - b. Check in and stock parts.
    - c. Fill and pack an order.

STOCKING, SHIPPING, AND RECEIVING
UNIT VI

SUGGESTED ACTIVITIES

I. Provide student with objective sheet.

II. Provide student with information and job sheets.

III. Make transparencies.

IV. Discuss unit and specific objectives.

V. Discuss information sheet.

VI. Demonstrate and discuss the procedures outlined in job sheets.

VII. Obtain shipping forms from local parts dealers for students to practice filling out.

(NOTE: If you have a school print shop, have extra forms printed there.)

VIII. Take a field trip to a shipping company.

IX. Give test.

INSTRUCTIONAL MATERIALS

I. Included in this unit:

  A. Objective sheet

  B. Information sheet

  C. Transparency masters

    1. TM 1--Parts Bin Arrangement

    2. TM 2--Shipping Receipt

    3. TM 3--Packing Slip

    4. TM 4--Invoice or Counter Ticket

    5. TM 5--Bill of Lading

  D. Job sheets

    1. Job Sheet #1--Arrange a Parts Bin

    2. Job Sheet #2--Check in and Stock Parts

    3. Job Sheet #3--Fill and Pack an Order

E. Test

F. Answers to test

II. References:

A. *Automotive Wholesaler Counterman's Handbook*. Chicago, IL: Automotive Service Industry Association, 1977.

B. Kinzer, Lowry G., and Howard, Mary-Anne. *Merchandising*. Sante Fe, NM 87501: Vocational-Technical Education Office of the New Mexico State Department of Education, 1976.

C. Notgrass, Troy. *Auto Parts Counter Worker*. Austin, TX: Instructional Materials Center, University of Texas at Austin, 1979.

D. Notgrass, Troy. *Auto Partsman, Coordinator's Guide*. Austin, TX: Instructional Materials Center, University of Texas at Austin, 1979.

STOCKING, SHIPPING, AND RECEIVING
UNIT VI

INFORMATION SHEET

I. Terms and definitions

  A. Bin--Any one of several types of adjustable shelves used to store parts

  B. Order--A request made by phone or mail for some dealer or parts store to ship goods

  C. Back order--An order for merchandise that is not currently in stock but will be delivered when it becomes available

  D. Fast moving parts--Those parts which sell very quickly

  Example: Tune up parts

II. Organization of parts bin

  A. Arrangement of bins will affect the speed and accuracy of a parts person

  B. For easy access and adequate lighting, parts bins are usually not over 7 feet tall

  C. Parts bins are often arranged in double rows, back to back (Transparency 1)

  D. Aisles between parts bins should be 3 feet wide to assure easy access

  E. Metal bins are more adaptable than wooden ones because the shelves are movable and the sections can be made larger or smaller

  F. The most common method of bin arrangement is a group system in which related parts are stored in the same group of bins

  G. The bulk, shape, and weight of an item, in addition to how quickly it will sell, makes a difference in where it is stored

  H. Fast moving items should be close at hand and easy to reach

  I. The old stock is always sold first, so it is a good practice to put the new items behind the old stock on the shelves

  J. Stock is usually stored in bins either alphabetically or by numerical part number sequence

  K. Rubber parts or gaskets should be stored in a cool, dry place because heat can ruin them

  L. To prevent fires in the store or warehouse, paint and other flammable liquids should be stored in cool, ventilated places

INFORMATION SHEET

M. Special bins or racks are desirable for odd shaped items such as hoses, belts, and tailpipes

(NOTE: Regardless of the method of bin organization which an employer uses, the greater care a parts person takes in stocking merchandise, the fewer problems identifying and locating parts.)

III. Forms of transportation used in shipping parts

A. U.S. Postal Service

B. United Parcel Service

C. Bus companies

D. Truck companies

Example: R.E.A. Express

E. Train

F. Air express

G. Ship

H. Company vehicles

IV. Forms used in shipping parts (Transparency 2, 3, 4, and 5)

A. Shipping receipt--A form showing quantity, description, weight, and shipping costs of the merchandise being delivered

B. Packing slip--An itemized list packed with the parts which lists the articles to be found in the box or package

C. Invoice--A form listing the part number, description, and price for each individual part and the total cost of the shipment

D. Bill of lading--A form listing quantity and description of goods, plus shipping instructions, to be used in transferring parts from shipper to transportation company

V. Methods of payment used in shipping and receiving parts

A. COD (cash on delivery)--The person receiving parts pays carrier for them when they are delivered; the transportation charges are either paid by the shipper or the purchaser depending on their agreement

B. Prepaid--The seller pays the transportation costs before shipping the merchandise

C. Freight collect--The person receiving parts pays the carrier for the freight upon receipt of parts

INFORMATION SHEET

VI. Procedure for receiving shipments

A. Accepting the shipment from the transportation company

1. Make sure all parcels are addressed to your company

2. Count number of packages delivered, and make sure they correspond to the number listed on the bill of lading, or shipping receipt

3. If there is any sign of damage (such as broken cartons) or a shortage of merchandise, this should be noted on the shipping receipt before it is signed

(NOTE: If damages or shortages are noted on the receipt, the delivery person should also sign the receipt, to show that there was a problem with the delivery.)

B. Checking in individual parts received

(NOTE: The procedure for checking in parts varies from business to business; learn the company procedure where you work and follow it carefully because this is an essential part of inventory control.)

1. Locate the box or package that contains packing slip

2. Keep shipping receipt and purchase order (if available) handy when you check in parts to make sure quantity and part numbers match

3. As you open a box or package, check each item against the packing slip and make note of any parts missing or on "back order"

4. Note any overages, shortages, "special orders," or damages that could not be noticed before the box was opened, and report these discrepancies to your manager

5. As you unpack each item, make sure it is tagged with the correct part number so it can be stored in its proper bin as soon as possible

VII. Steps for filling and packing an order

A. Have checklist of all parts to be packed

B. Pull parts to be shipped from stock

C. Choose a container strong enough to hold all merchandise being shipped

D. Mark each item off the checklist as it is packed and place packing material in and around the merchandise to avoid damage during shipping

INFORMATION SHEET

E. When all items have been packed, place the packing slip in one of the boxes or attach it securely to the outside of a package

1. If there is more than one box or package being sent to the same customer, the packing slip goes in only one of the containers
2. Clearly mark that container "Packing Slip Enclosed"
3. You may number the boxes so the customer will know in which order they were packed

   Example: If there are three boxes, mark them 1 of 3, 2 of 3, and 3 of 3

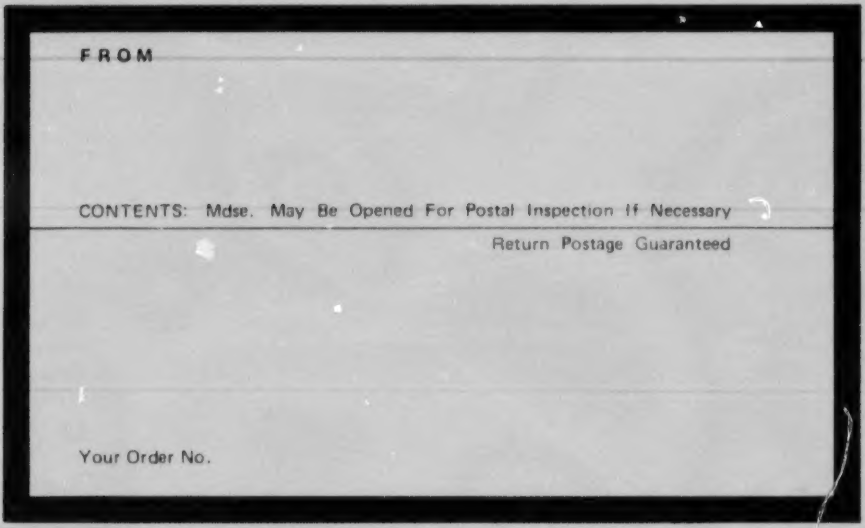
F. Write up an invoice of quantity, description, and prices of merchandise being shipped for customer

(NOTE: It is best to put the invoice in an envelope and attach it directly to the package so it goes along with the shipment.)

G. Prepare the packages for shipment by putting customer's address, [illegible]urn address, and any other necessary instructions such a "FRAGILE" or THIS SIDE UP"

(NOTE: Address labels are especially useful.)

Example:



FROM

CONTENTS: Mdse. May Be Opened For Postal Inspection If Necessary

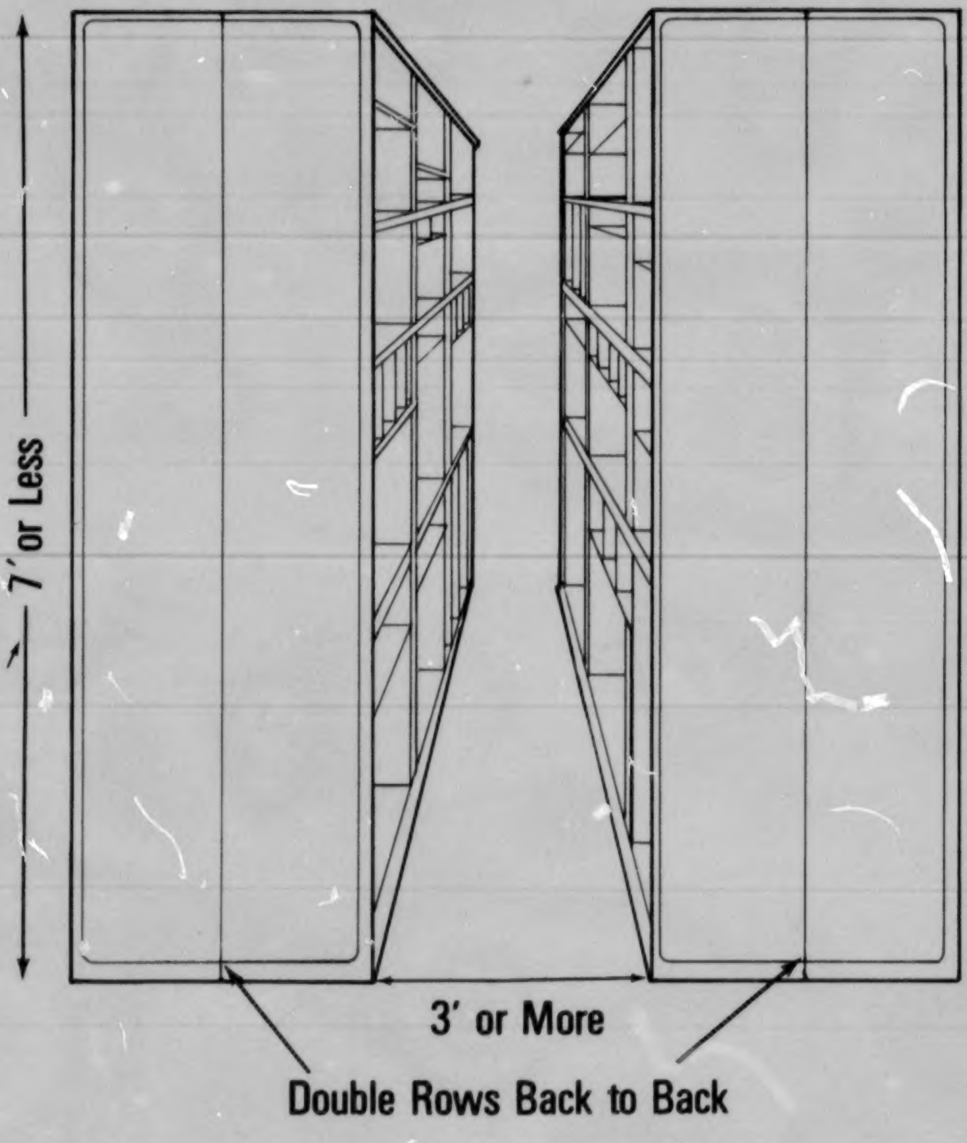
Return Postage Guaranteed

Your Order No.

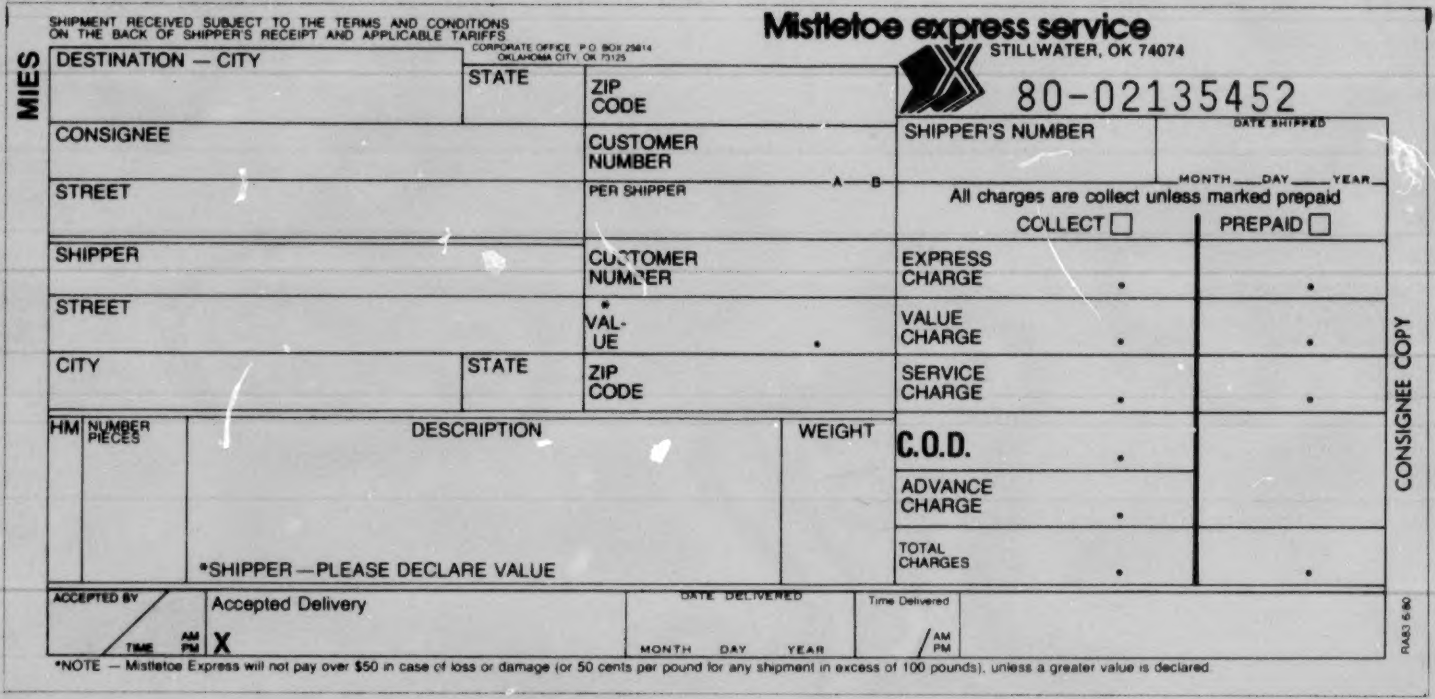
H. Be sure to tape, tie, or strap packages according to post office or transportation company's requirements

I. Ship order to customer

Parts Bin Arrangement


7' or Less
3' or More
Double Rows Back to Back

Shipping Receipt



SHIPMENT RECEIVED SUBJECT TO THE TERMS AND CONDITIONS ON THE BACK OF SHIPPER'S RECEIPT AND APPLICABLE TARIFFS

CORPORATE OFFICE P.O. BOX 25814
OKLAHOMA CITY, OK 73125

Mistletoe express service
STILLWATER, OK 74074

80-02135452

MIES

DESTINATION — CITY	STATE	ZIP CODE		
CONSIGNEE		CUSTOMER NUMBER	SHIPPER'S NUMBER	DATE SHIPPED MONTH ___ DAY ___ YEAR ___
STREET		PER SHIPPER A — B	All charges are collect unless marked prepaid	
			COLLECT ☐	PREPAID ☐
SHIPPER		CUSTOMER NUMBER	EXPRESS CHARGE .	.
STREET		*VALUE .	VALUE CHARGE .	.
CITY	STATE	ZIP CODE	SERVICE CHARGE .	.

HM	NUMBER PIECES	DESCRIPTION	WEIGHT		
				C.O.D. .	
				ADVANCE CHARGE .	
		*SHIPPER — PLEASE DECLARE VALUE		TOTAL CHARGES .	.

ACCEPTED BY TIME AM PM	Accepted Delivery X	DATE DELIVERED MONTH DAY YEAR	Time Delivered / AM PM	

*NOTE — Mistletoe Express will not pay over $50 in case of loss or damage (or 50 cents per pound for any shipment in excess of 100 pounds), unless a greater value is declared.

CONSIGNEE COPY

RA83 6-80

PS-245

Packing Slip

PACKING SLIP

CHARGE TO

SHIP TO

ORDER NO.

ORDER NO	CARRIER NO.	P.O. NO.	SHIPPED VIA	DEALER CODE	DATE SHIPPED

QUANTITY	PART NUMBER	PART NAME	WEIGHT	SHIPPED	B.O.	

PPD/COLL.	INVOICE NO.	PICKED BY	CHECKED BY	DELIVERED BY	TOTAL WEIGHT

COD CHARGES

TOTAL

TM 3

Invoice or Counter Ticket

A171352
INVOICE NO.

FROM

MAIN AUTO SUPPLY INC.
923 SOUTH MAIN • PHONE 372-4422 • STILLWATER, OKLA. 74074

Main Auto Supply Inc.
923 So. Main
Stillwater, Okla. 74074
(405) 372 4422

Robertson Automotive Inc.
209 West Moses
Cushing, Okla. 74023
(918) 225-4525

Stroud Auto Supply
316 No. 4th Ave.
Stroud, Okla. 74079
(918) 968-3841

Pawnee Auto Parts
653 Illinois
Pawnee, Okla. 74058
(918) 762 3232

TO

CASH ☐ CASH REFUND ☐ CHARGE ☐ CREDIT MEMO ☐ R.O.A. ☐

DELIVERY	P.O. NO.
SALESMAN	DATE

STOCK	LINE	PART NUMBER	DESCRIPTION	PRICE	QTY	NET	AMOUNT	CORE
			Original contains more					
			lines than shown; this					
			has been modified for					
			reproduction convenience.					

WARRANTY DISCLAIMER - "The factory warranty constitutes all of the warranties with respect to the sale of all items. The seller hereby expressly disclaims all warranties, either express or implied, including any implied warranty of merchantability or fitness for a particular purpose, and the seller neither assumes nor authorizes any other person to assume for it any liability in connection.

LABOR

AMT. TOTAL	+
SUB. TOTAL =	
TAX ⟶	
LABOR	
INV. TOTAL $	

RECEIVED BY:

SEE REVERSE SIDE FOR CONTRACT TERMS. THIS IS YOUR ONLY INVOICE.

ORIGINAL INVOICE

Your NAPA Jobber is The Right Place to Go!

Bill of Lading

LW- 232963

Shipper No. ______

Carrier No. ______

Date ______

STRAIGHT BILL OF LADING
ORIGINAL—NOT NEGOTIABLE

Lee Way MOTOR FREIGHT, INC. LEEW

TO: Consignee	FROM: Shipper
On Collect on Delivery shipments, the letters "COD" must appear before consignee's name or as otherwise provided in Item 430, Sec. 1.	
Street	Street
Destination Zip	Origin Zip
Route	Vehicle Number

No. Shipping Units	* HM	Kind of Packaging, Description of Articles, Special Marks and Exceptions	Weight (Subject to Correction)	Rate	CHARGES (for Carrier use only)
		Original contains more lines than shown; this			
		has been modified for reproduction convenience.			

REMIT C.O.D. TO:

ADDRESS

COD Amt: $

C.O.D. FEE:
PREPAID ☐ $
COLLECT ☐

TOTAL CHARGES: $

Note - Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property.
The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding

$ ______ per ______

Subject to Section 7 of the conditions, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement.
The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.

______
(Signature of Consignor)

FREIGHT CHARGES
FREIGHT PREPAID except when box at right is checked

Check box if charges are ☐ to be collect

[illegible]

SHIPPER:

PER:

This is to certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

CARRIER: LEE WAY MOTOR FREIGHT, INC.

PER:

DATE:

1

* Mark with "X" to designate Hazardous Material as defined in the Department of Transportation Regulations Governing Transportation of Hazardous Materials. The use of this column is an optional method of designating hazardous materials on bills of lading per Section 172.201 and 172.202(b) of the regulations governing the transportation of such materials.

1615 (1-79)

STOCKING, SHIPPING, AND RECEIVING
UNIT VI

JOB SHEET #1--ARRANGE A PARTS PIN

I. Tools and materials

  A. Parts bins

  B. Dividers

  C. Shelves

  D. Letters and numbers to identify bins

  E. Assortment of parts

II. Procedure

  A. Decide how to arrange parts bins in a given area, making most effective use of space provided

  B. Place shelves and dividers in desired locations, depending on parts to be stored

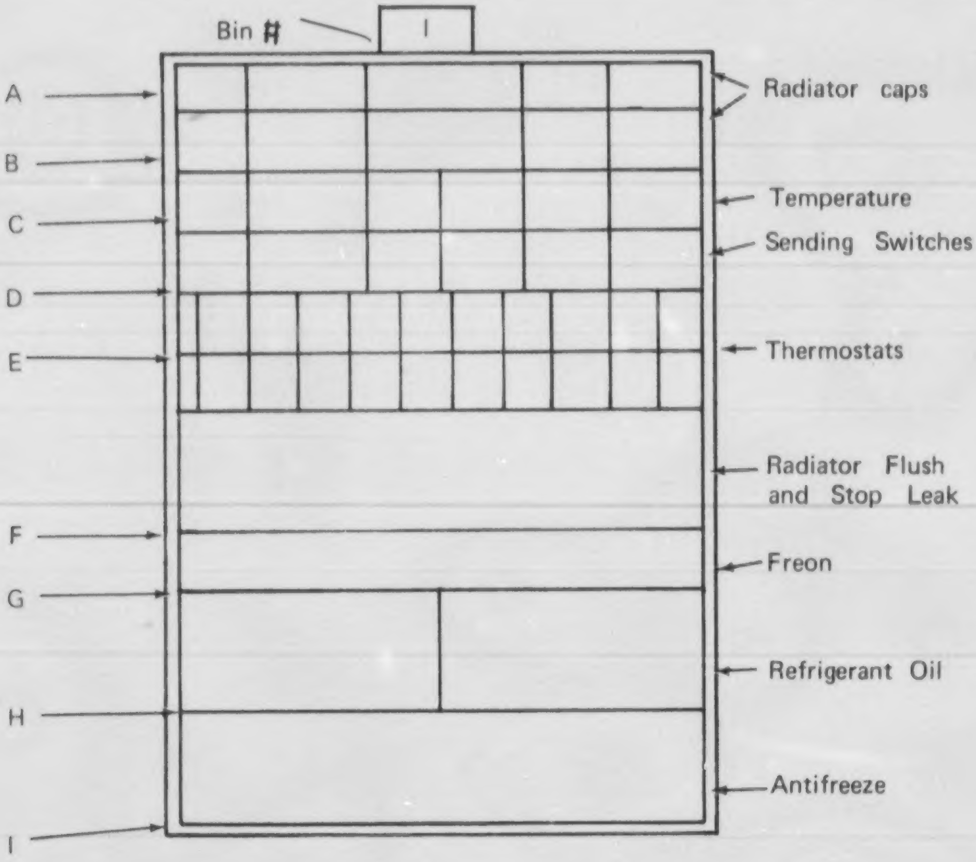
  C. Labels bins in either numerical or alphabetical sequence

JOB SHEET #1

D. Stock parts in bins, taking into consideration the bulk, shape, weight, and rate of sale of the items (Figure 1)

(NOTE: Place heavier items on bottom shelves, slow moving parts on the top, and fast moving parts on the shelves that are easiest to reach.)

FIGURE 1


Bin #
I
A
B
C
D
E
F
G
H
I
Radiator caps
Temperature
Sending Switches
Thermostats
Radiator Flush and Stop Leak
Freon
Refrigerant Oil
Antifreeze

STOCKING, SHIPPING, AND RECEIVING
UNIT VI

JOB SHEET #2--CHECK IN AND STOCK PARTS

I. Tools and materials

  A. Large cardboard box or boxes

  B. Assorted parts packed within the box

  C. Packing slip

  D. Tags to number or label parts

  E. Parts bins

II. Procedure

  A. Locate packing slip in box

  B. Open each part in box; be sure to observe each part number to make sure it corresponds with the number on the packing slip and check them off

  C. Tag each part according to which bin and shelf it is to be placed on

  D. If there are any shortages or damaged parts, make note of them on the packing slip

  E. Stock parts in appropriate bins

STOCKING, SHOPPING, AND RECEIVING
UNIT VI

JOB SHEET #3--FILL AND PACK AN ORDER

I. Tools and materials

A. Order or checklist of parts to be packed

B. Parts bins with merchandise on shelves

C. Box to pack order in

D. Packing material

E. Tape and string to wrap box

F. Label for addressing box

G. Packing slip and invoice

II. Procedure

A. Have checklist in hand

B. Pull needed parts from bins

C. Check off parts as they are pulled

D. Pack neatly in box, using packing material if necessary

E. Enclose the packing slip when all parts to be shipped are in the box

F. Write invoice (include quantity, description and price of each part shipped along with the total cost of merchandise)

(NOTE: Some orders may be sent without prices; only a packing slip is sent and the invoice is sent later.)

G. Prepare the box for shipment

STOCKING, SHIPPING, AND RECEIVING
UNIT VI

NAME ______________________________

TEST

1. Match the terms on the right with their correct definitions.

_____a. Any one of several types of adjustable shelves used to store parts

_____b. A request made by phone or mail for some dealer or parts store to ship goods

_____c. An order for merchandise that is not currently in stock but will be delivered when it becomes available

_____d. Those parts which sell very quickly

1. Back order
2. Order
3. Fast moving parts
4. Bin

2. Select true statements concerning the organization of parts bins by placing an "X" in the appropriate blanks.

_____a. Arrangement of bins will not affect the speed and accuracy of a parts person

_____b. For easy access and adequate lighting, parts bins are usually not over 5 feet tall

_____c. Parts bins are often arranged in double rows, back to back

_____d. Aisles between parts bins should be 12 inches wide to assure easy access

_____e. Wooden bins are more adaptable than metal ones because the shelves are movable and the sections can be made larger or smaller

_____f. The most common method of bin arrangement is a group system in which related parts are stored in the same group of bins

_____g. The bulk, shape, and weight of an item, in addition to how quickly it will sell, makes a difference in where it is stored

_____h. The new stock is always sold first, so it is a good practice to put the new items in front of the old stock on the shelves

_____i. Stock is usually stored in bins either alphabetically or by numerical part number sequence

_____j. Rubber parts or gaskets should be stored in a warm, moist place because cool, dry air can ruin them

3. List four forms of transportation used in shipping parts.

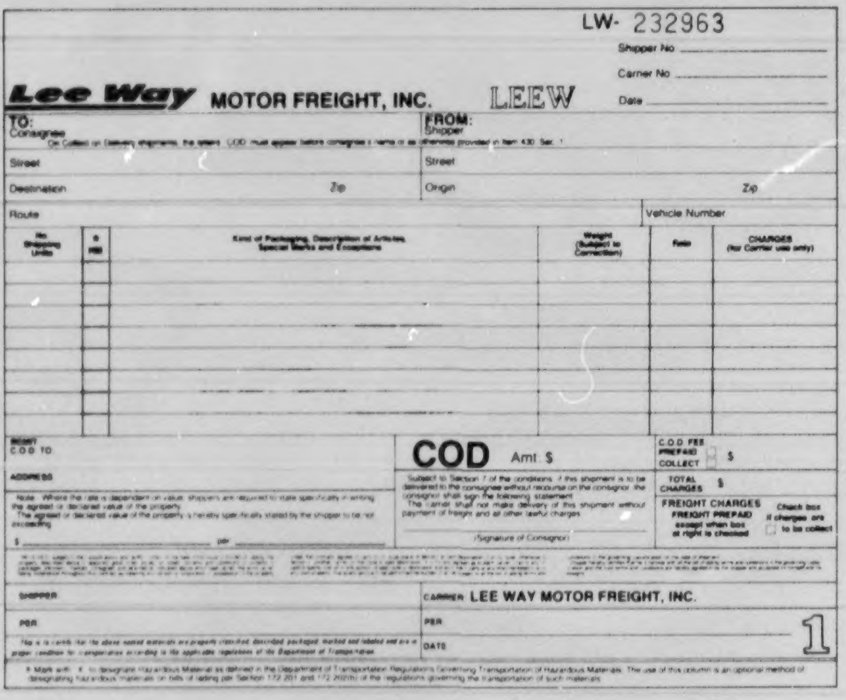
a. ______________________________

b. ______________________________

c. ______________________________

d. ______________________________

4. Identify forms used in shipping parts.



LW- 232963

Shipper No ____________

Carrier No ____________

Date ____________

Lee Way MOTOR FREIGHT, INC. LEEW

TO: Consignee	FROM: Shipper
Street	Street
Destination Zip	Origin Zip
Route	Vehicle Number

No. Shipping Units	* HM	Kind of Packaging, Description of Articles, Special Marks and Exceptions	Weight (Subject to Correction)	Rate	CHARGES (for Carrier use only)

REMIT C.O.D. TO

ADDRESS

COD Amt $

C.O.D. FEE PREPAID ☐ COLLECT ☐ $

TOTAL CHARGES $

Subject to Section 7 of the conditions, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement:
The carrier shall not make delivery of this shipment without payment of freight and all other lawful charges.

(Signature of Consignor)

FREIGHT CHARGES
FREIGHT PREPAID except when box at right is checked

Check box if charges are ☐ to be collect

Note — Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property.
The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding

$ ____________ per ____________

SHIPPER

PER

CARRIER LEE WAY MOTOR FREIGHT, INC.

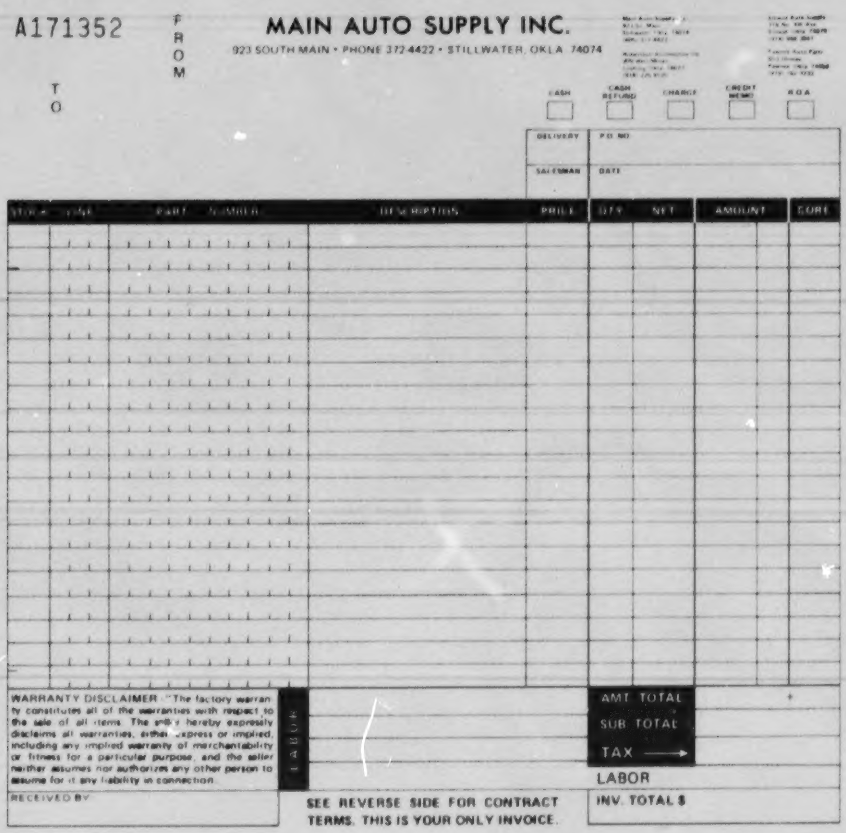
PER

DATE

1

a. ______________________________

PS-259



A171352

FROM

MAIN AUTO SUPPLY INC.

923 SOUTH MAIN • PHONE 372-4422 • STILLWATER, OKLA. 74074

TO

CASH ☐ CASH REFUND ☐ CHARGE ☐ CREDIT MEMO ☐ R.O.A. ☐

DELIVERY	P.O. NO.
SALESMAN	DATE

STOCK	LINE	PART NUMBER	DESCRIPTION	PRICE	QTY	NET	AMOUNT	CORE

WARRANTY DISCLAIMER: "The factory warranty constitutes all of the warranties with respect to the sale of all items. The seller hereby expressly disclaims all warranties, either express or implied, including any implied warranty of merchantability or fitness for a particular purpose, and the seller neither assumes nor authorizes any other person to assume for it any liability in connection.

LABOR

AMT. TOTAL

SUB TOTAL

TAX →

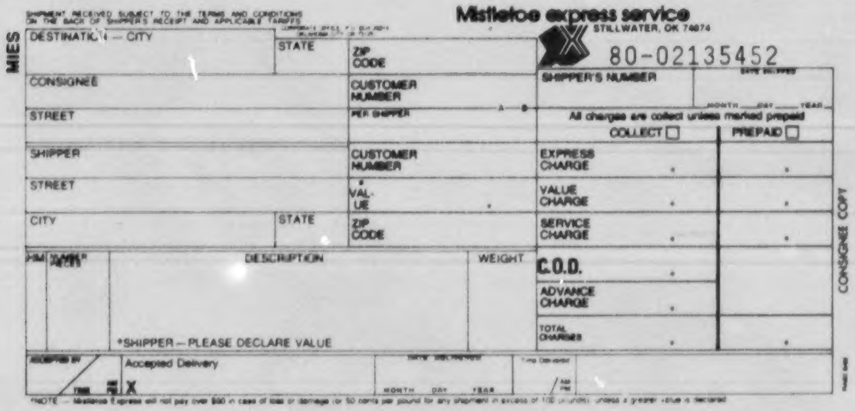
LABOR

INV. TOTAL $

RECEIVED BY

SEE REVERSE SIDE FOR CONTRACT TERMS. THIS IS YOUR ONLY INVOICE.

b.



SHIPMENT RECEIVED SUBJECT TO THE TERMS AND CONDITIONS ON THE BACK OF SHIPPER'S RECEIPT AND APPLICABLE TARIFFS

Mistletoe express service

STILLWATER, OK 74074

80-02135452

MIES

DESTINATION — CITY	STATE	ZIP CODE	
CONSIGNEE		CUSTOMER NUMBER	SHIPPER'S NUMBER
STREET		PER SHIPPER	All charges are collect unless marked prepaid COLLECT ☐ PREPAID ☐
SHIPPER		CUSTOMER NUMBER	EXPRESS CHARGE
STREET		*VALUE	VALUE CHARGE
CITY	STATE	ZIP CODE	SERVICE CHARGE

HM	NUMBER PIECES	DESCRIPTION	WEIGHT	
				C.O.D.
				ADVANCE CHARGE
		*SHIPPER — PLEASE DECLARE VALUE		TOTAL CHARGES

Accepted Delivery

X

MONTH DAY YEAR

Time Delivered

AM / PM

CONSIGNEE COPY

*NOTE — Mistletoe Express will not pay over $50 in case of loss or damage (or 50 cents per pound for any shipment in excess of 100 pounds) unless a greater value is declared.

c.

29

CHARGE TO

SHIP TO

ORDER NO.

ORDER NO.	CARRIER NO.	P.O. NO.	SHIPPED VIA	DEALER CODE	DATE SHIPPED

QUANTITY	PART NUMBER	PART NAME	WEIGHT	SHIPPED	B.O.	

PPD/COLL.	INVOICE NO.	PICKED BY	CHECKED BY	DELIVERED BY	TOTAL WEIGHT

COD CHARGES

TOTAL

d.

5. Define methods of payment used in shipping and receiving parts.

   a. COD ______________________________

   ____

   b. Prepaid ______________________________

   ____

   c. Freight collect ______________________________

   ____

6. Select true statements concerning the procedure for receiving shipments by placing an "X" in the appropriate blanks.

   a. Accepting the shipment from the transportation company

      ______1) Sign the shipping receipt first so the transportation company employee can leave

      ______2) Make sure all parcels are addressed to your company

      ______3) Count number of packages delivered and make sure that number corresponds to the number listed on the bill of lading or shipping receipt

   b. Checking in individual parts received

      ______1) First, give packing slip to manager to be filed immediately

      ______2) Shipping receipts and purchase orders do not need to be handy because if you deal with a reputable shipping company, there won't be any discrepancies

      ______3) As you unpack each item, make sure it is tagged with the correct part number so it can be stored in its proper bin as soon as possible

7. Arrange in order the steps for filling and packing an order by placing the correct sequence number in the appropriate blank.

   ______a. Write up an invoice of quantity, description, and prices of merchandise being shipped for customer

   ______b. Choose a container strong enough to hold all merchandise being shipped

   ______c. When all items have been packed, place the packing slip in one of the boxes or attach it securely to the outside of a package

   ______d. Ship order to customer

   ______e. Pull parts to be shipped from stock

   ______f. Mark each item off the checklist as it is packed and place packing material in and around the merchandise to avoid damage during shipping ______g. Have checklist of all parts to be packed

______h. Be sure to tape, tie, or strap packages according to post office or transportation company's requirements

______i. Prepare the packages for shipment by putting customer's address, return address, and any other necessary instructions such as "FRAGILE" or "THIS SIDE UP"

8. Demonstrate the ability to:

   a. Arrange a parts bin.

   b. Check in and stock parts.

   c. Fill and pack an order.

   (NOTE: If these activities have not been accomplished prior to the test, ask your instructor when they should be completed.)

STOCKING, SHIPPING, AND RECEIVING
UNIT VI

ANSWERS TO TEST

1. a. 4
   b. 2
   c. 1
   d. 3

2. c, f, g, i

3. Any four of the following:
   a. U.S. Postal Service
   b. United Parcel Service
   c. Bus companies
   d. Truck companies
   e. Train
   f. Air express
   g. Ship
   h. Company vehicles

4. a. Bill of lading
   b. Invoice
   c. Shipping receipt
   d. Packing slip

5. a. COD--The person receiving parts pays carrier for them when they are delivered; the transportation charges are either paid by the shipper or the purchaser depending on their agreement

   b. Prepaid--The seller pays the transportation costs before shipping the merchandise

   c. Freight collect--The person receiving parts pays the carrier for the freight upon receipt of parts

6. a. 2, 3
   b. 3

7. a. 6
   b. 3
   c. 5
   d. 9
   e. 2
   f. 4
   g. 1
   h. 8
   i. 7

8. Performance skills evaluated to the satisfaction of the instructor

INVENTORY CONTROL
UNIT VII

UNIT OBJECTIVE

After completion of this unit, the student should be able to list the reasons for good inventory control and the items found on an inventory control card. The student should also be able to detail the procedures for taking a physical inventory, interpret inventory coding systems, and personally conduct a physical inventory. This knowledge will be evidenced by correctly performing the procedures outlined in the assignment and job sheets and by scoring 85 percent on the unit test.

SPECIFIC OBJECTIVES

After completion of this unit, the student should be able to:

1. Match terms related to inventory control with their correct definitions.
2. Complete a list of needs fulfilled by good inventory control.
3. Match items included on inventory cards with their purposes.
4. Select true statements concerning purposes for taking inventory.
5. Select true statements concerning guidelines for taking a physical inventory.
6. Select true statements concerning perpetual and physical inventories.
7. List advantages of computers in inventory control.
8. Complete a list of the national coding system for popularity of parts.
9. Solve problems concerning regional coding systems for popularity of parts.
10. Fill out an inventory control card.
11. Demonstrate the ability to take a physical inventory.

INVENTORY CONTROL
UNIT VII

SUGGESTED ACTIVITIES

I. Provide student with objective sheet.

II. Provide student with information, assignment, and job sheets.

III. Make transparencies.

IV. Discuss unit and specific objectives.

V. Discuss information, assignment, and job sheets.

VI. NAPA warehouse in local area has excellent training films available upon request.

VII. Take field trip to at least two different parts warehouses or jobbers to observe inventory control methods.

VIII. Invite a guest speaker to talk about benefits of computers.

IX. Give test.

INSTRUCTIONAL MATERIALS

I. Included in this unit:

  A. Objective sheet

  B. Information sheet

  C. Transparency masters

    1. TM 1--Inventory Control Card

    2. TM 2--Computer Print-out for Inventory Control

  D. Assignment Sheet #1--Fill Out an Inventory Control Card

  E. Answers to assignment sheet

  F. Job Sheet #1--Take a Physical Inventory

  G. Test

  H. Answers to test

II. References:

  A. *Automotive Wholesaler Counterman's Handbook.* Chicago, IL: Automotive Service Industry Association, 1977.

  B. Sumpter, Tom. *Basic Auto Parts Training.* Fairview, OR: 1980.

INVENTORY CONTROL
UNIT VII

INFORMATION SHEET

I. Terms and definitions

- A. Inventory--Parts and supplies on hand for sale to customers
- B. Inventory control--Methods of keeping record of the quantity and type of merchandise on hand
- C. Inventory card--Used to keep a running count of items in inventory

  (NOTE: Sometimes referred to as *Kardex*, these cards contain more information than just number of items; see Transparency 1.)

- D. Perpetual inventory--Record kept of each item showing the amount of merchandise put in stock, withdrawn, and on hand at any given time without the necessity of taking a physical count
- E. Physical inventory--A method used to count items in stock by hand, usually taken at least once a year
- F. Posting--Adding to or removing an item or items recorded on inventory cards
- G. Active stock--Merchandise that sells quickly
- H. C.R.T. (Cathode ray tube)--Visual display screen used with a computer
- I. Mini/max--A method used in inventory control to maintain a minimum or maximum number of any specific items in stock

  (NOTE: Parts are ordered when the minimum quantity is reached not to exceed the maximum number; the mini/max numbers may have to be raised or lowered depending on the rate of turnover.)

- J. Reserve stock--Merchandise kept in warehouse to replace active stock as it is sold
- K. Stock rotation--A method of placing new merchandise behind older merchandise so old items will be sold first

  (NOTE: Refer to FIFO.)

- L. Hard parts--Sometimes called hard lines which include metal parts, power tools, hand tools, paints, electrical products, and various hardware items kept by the parts suppliers
- M. Soft parts--Usually nonmetal items such as rubber, paper, gaskets, hoses, belts, and other pliable goods
- N. Turnover--How quickly stock moves and is replaced within a certain period of time

INFORMATION SHEET

O. FIFO (first in, first out)--A type of perpetual inventory whereby the first items placed in stock are the first ones taken out

(NOTE: This is the most common.)

P. LIFO (last in, first out)--A type of perpetual inventory whereby the newest items placed in stock are the first ones taken out

Q. Emergency order--An order placed for special items not regularly stocked

R. Intermediate order--An order placed after a regular stock order to replenish stock until the regular stock order shipment is received

S. Lost sales--Items requested by customers but not carried in stock

(NOTE: Lost sales reports should be completed regularly for inventory update.)

T. Flag--Method using small tags attached to inventory control cards to indicate at a glance whether a part is backordered or out of stock

II. Needs fulfilled by good inventory control

A. Keeps supplies and parts up-to-date

B. Keeps track of damaged stock

C. Controls improperly binned stock

D. Keeps customer satisfaction up

E. Controls understocking or overstocking

F. Shows movement and turnover of stock

III. Items included on inventory cards and their purposes (Transparency 1)

A. Part no.--A number assigned to a specific part; sometimes accompanied by a letter for added ease of locating parts

B. Mini/max--Minimum and maximum number of parts kept in stock

C. Application--Common name of the part

(NOTE: Application may include a description or descriptive items such as weight or technical clarification.)

D. Class--Popularity code assigned to an item

E. Dept--Department carrying the item in stock

F. Set--Priced and sold as a set

Example: Brake shoes

INFORMATION SHEET

G. Unit pkg--Items that can be priced and sold individually

Example: Spark plugs

H. Cost--Price of each piece of unit pkg or price of set

I. Sales--Record of number sold quarterly

J. Date--Date parts are sold, received, or inventoried

K. Recd--Number of items received

L. Sold--Number of items sold

M. Bal--Number of items in current inventory

IV. Purposes for taking inventory

A. It shows whether or not all stock is accounted for

B. Helps in preparing financial statements for tax purposes or special reports

C. Helps in preparing lost sales report

D. Checks the actual condition of stock

E. It reveals items replaced or superseded

F. Helps update stock

V. Guidelines for taking a physical inventory

A. Merchandise should be arranged by shelf or section, or the order in which the merchandise will be recorded on the inventory sheet

B. When filling out the description column use a wavy line to indicate the item is the same as the item on the previous line; do not use ditto (") marks on this column

C. Do not erase; cross out, using a pen or pencil for corrections

D. Write legibly because someone must read what you have written

(NOTE: Write dollars and cents accurately, making certain to keep the dollar amount in the dollar column and the cents in their column. Also write numbers such as 1, 4, 5, 7, 8, 9 as these numbers can be confused with one another.)

E. Do not leave spaces blank in any of the columns when recording stock items

F. Do not leave any lines blank

INFORMATION SHEET

G. Count merchandise from the top shelf first moving from left to right then down

H. Quantities of an item should be listed per item with the price entered per item, and then extended and added to the total

VI. Perpetual and physical inventories

A. When a physical inventory is taken, results are compared to the perpetual inventory to see if they equal each other

B. When the results are the same, the physical inventory is even

C. When the physical inventory is less than the perpetual inventory, the physical inventory is short

D. When the physical inventory is more than the perpetual inventory, the physical inventory is over

(NOTE: When the physical inventory is short or over, it indicates a problem and corrections should be made on balance card.)

VII. Advantages of computers in inventory control (Transparency 2)

(NOTE: More and more businesses are using computers for inventory control.)

A. Quickly produces an order printout for daily or weekly purchases from a supplier

B. Produces a clearly printed invoice for the customer

C. Automatically removes items sold from inventory

D. Saves time in the posting of items on inventory cards

E. Can be programmed to set minimums and maximums

F. Checks stock and identifies superseded items

G. An "on line" computer can order merchandise automatically

H. Can check suppliers stock automatically

I. Can check backorder items

(NOTE: The computer helps in many other areas of business operations, but is only as accurate as the person operating it.)

INFORMATION SHEET

VIII. National coding system for popularity of parts

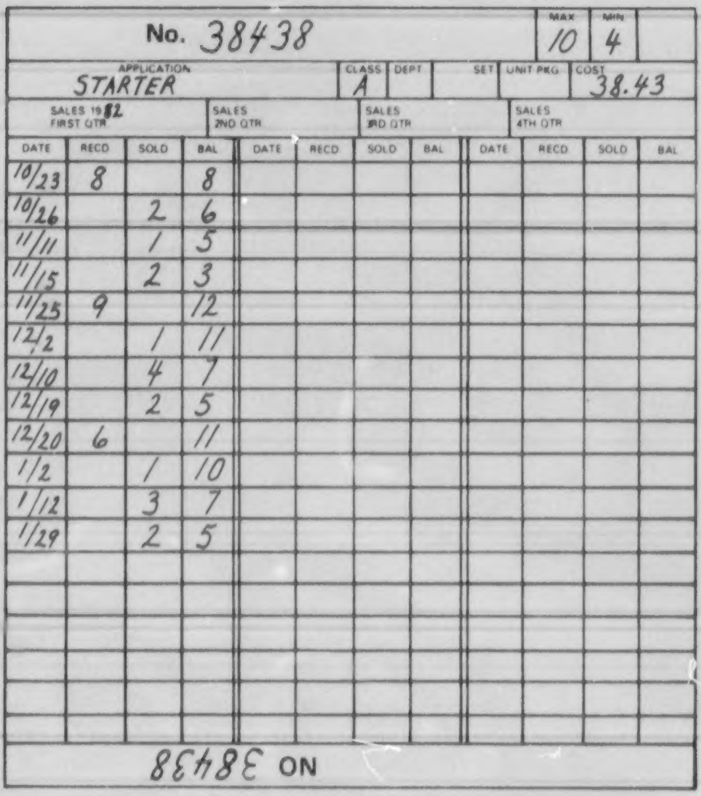
- A. A = Fast moving parts
- B. B = Medium moving parts
- C. C = Average moving parts
- D. D = Slow moving parts
- E. W = Warehouse stock
- F. N = New item
- G. ↑ = Increasing popularity
- H. ↓ = Decreasing popularity

IX. Regional coding systems for popularity of parts

- A. Letter type coding
  1. A = Slow moving parts
  2. B = Average moving parts
  3. C = Medium moving parts
  4. D = Fast moving parts
- B. Number type coding
  1. 1 = Fast moving parts
  2. 2 = Medium moving parts
  3. 3 = Average moving parts
  4. 4 = Slow moving parts

  (NOTE: Codes may vary from region to region, and students should become familiar with the coding system used in the region where they plan to work.)

Inventory Control Card



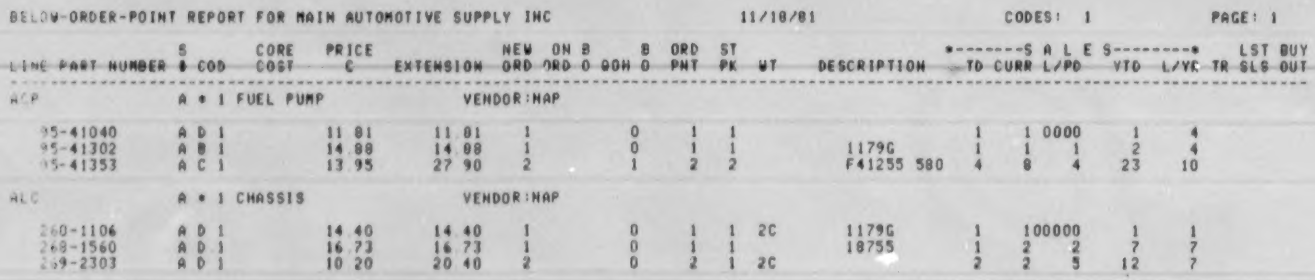
No. 38438

MAX	10	MIN	4								
APPLICATION	STARTER	CLASS	A	DEPT		SET		UNIT PKG		COST	38.43
SALES 1982 FIRST QTR				SALES 2ND QTR				SALES 3RD QTR		SALES 4TH QTR	
DATE	RECD	SOLD	BAL	DATE	RECD	SOLD	BAL	DATE	RECD	SOLD	BAL
10/23	8		8								
10/26		2	6								
11/11		1	5								
11/15		2	3								
11/25	9		12								
12/2		1	11								
12/10		4	7								
12/19		2	5								
12/20	6		11								
1/2		1	10								
1/12		3	7								
1/29		2	5								

NO 38438

The number at the bottom of the card indicates that the card can be turned upside down when a minimum number of the item is in stock; when the item is backordered, a metal flag can be attached to the top of the card; this particular inventory control card indicates that the fiscal year probably begins in October.

Computer Print-Out for Inventory Control



```
BELOW-ORDER-POINT REPORT FOR MAIN AUTOMOTIVE SUPPLY INC                  11/18/81              CODES: 1           PAGE: 1

                 S     CORE   PRICE              NEW  ON B     B  ORD  ST                        *-------S A L E S--------*     LST BUY
LINE PART NUMBER # COD  COST     C    EXTENSION  ORD ORD O QOH O  PNT  PK  WT   DESCRIPTION    TD CURR L/PD   YTD  L/YR TR SLS OUT
-------------------------------------------------------------------------------------------------------------------------------------
ACP              A * 1 FUEL PUMP                VENDOR:NAP

   95-41040      A D 1             11 81     11.81   1             0    1   1                      1    1 0000    1     4
   95-41302      A B 1             14.88     14.88   1             0    1   1        1179G         1    1    1    2     4
   95-41353      A C 1             13.95     27 90   2             1    2   2        F41255 580    4    8    4   23    10

ALC              A * 1 CHASSIS                  VENDOR:NAP

  260-1106       A D 1             14.40     14.40   1             0    1   1  2C    1179G         1    100000    1     1
  268-1560       A D 1             16.73     16.73   1             0    1   1        18755         1    2    2    7     7
  269-2303       A D 1             10 20     20 40   2             0    2   1  2C                  2    2    5   12     7
```

Computerized inventory systems serve functions ranging from posting to billing. The example above is a BELOW-ORDER-POINT REPORT and should be read left to right as follows: The ACP is the three-digit manufacturer code and means AC Fuel Pumps, the part number follows, and S# means store number, and the A underneath indicates there is more than one store in the chain.

COD is a three-digit control number whose first digit indicates popularity of the item, the second digit is a control number for adding, dropping, or for seasonal items, and the third digit lists the supplier.

PRICE C is price per unit and EXTENSION is the price per unit times the number of units ordered. NEW ORD means new order, ON ORD means on order, BO means back order, QOH means quantity on hand, and ORD POINT means the quantity on hand has reached a minimum number and a new order is placed automatically. ST PK means the standard order quantity.

WT means weight and is used to indicate multiple-package items or weight requirements for the supplier to pay freight. DESCRIPTION may simply describe the item or be programmed for such functions as writing a customer invoice, or taking an item off inventory and placing it in accounts receiveable.

All items under SALES have the following meanings: TD is current month, CURR is current quarter, L/PD is previous quarter, YTD is year to date, and L/YR is last year. TR is the total of lost sales and buy outs, LST SLS indicates lost sales, and BUY OUT indicates items bought at other stores to service a good customer who wants an item that is out of stock or back ordered.

Big volume auto parts stores order daily; computers ease the burden of ordering, inventory, and bookkeeping, but counterpersons must understand the printouts and their purposes and supply the system with information that reflects changing customer demands.

INVENTORY CONTROL
UNIT VII

ASSIGNMENT SHEET #1--FILL OUT AN INVENTORY CONTROL CARD

No.									MAX	MIN	
APPLICATION					CLASS	DEPT		SET	UNIT PKG	COST	
SALES 19 FIRST QTR			SALES 2ND QTR			SALES 3RD QTR			SALES 4TH QTR		
DATE	RECD	SOLD	BAL	DATE	RECD	SOLD	BAL	DATE	RECD	SOLD	BAL
ON											

Directions: Use the following information to fill out the inventory card. The part number of a muffler is 736234, which cost $28.58 individually. The minimum stock order point is 2 and the maximum stock order point is 6. The muffler has a popularity class code of B. The beginning inventory is 4 and they arrived on 7/12/82. On 8/6/82, 2 mufflers were sold and that same day 4 more mufflers were ordered. Two days later the 4 mufflers arrived. On 8/15/82 three mufflers were sold. How many mufflers would be in stock if a physical inventory were taken on 8/16/82?

INVENTORY CONTROL
UNIT VII

ANSWERS TO ASSIGNMENT SHEET #1

No. 736234

MAX 6

MIN 2

APPLICATION MUFFLER

CLASS B

DEPT

SET

UNIT PKG ✓

COST 28.58

SALES 19 FIRST QTR

SALES 2ND QTR

SALES 3RD QTR

SALES 4TH QTR

DATE	RECD	SOLD	BAL	DATE	RECD	SOLD	BAL	DATE	RECD	SOLD	BAL
7/12	4		4								
8/6		2	2								
8/8	4		6								
8/15		3	3								

NO 736234

INVENTORY CONTROL
UNIT VII

JOB SHEET #1--TAKE A PHYSICAL INVENTORY

I. Materials:

- A. Inventory sheet
- B. Pencil
- C. Bins stocked with parts
- D. Clipboard

II. Procedure:

- A. Prepare for inventory
    1. Pick a partner
    2. Clean bins
    3. Open boxes neatly and orderly for easy counting
    4. Identify and tag miscellaneous parts
- B. Count and record inventory
    1. Fill out heading on inventory sheet
    2. Have caller start at top, far left, corner of bin
    3. Move to the right and down recording every item on the shelves
    4. Price and extend costs as you go
    5. Total inventory sheets
    6. After completing these steps, hand your inventory to your instructor for evaluation

JOB SHEET #1

Inventory ______________________________ PAGE ______

SHEET NO. ______________________________ PRICED BY ______________

CALLED BY ______________ DEPARTMENT ______________ EXTENDED BY ______________

ENTERED BY ______________ LOCATION ______________ EXAMINED BY ______________

UANTITY	UNIT	DESCRIPTION	PRICE	UNIT	EXTENSION	TOTAL	✓

INVENTORY CONTROL
UNIT VII

NAME ______________________________

TEST

1. Match the terms on the right with their correct definitions.

_____a. Parts and supplies on hand for sale to customers

_____b. Methods of keeping record of the quantity and type of merchandise on hand

_____c. Used to keep a running count of items in inventory

_____d. Record kept of each item showing the amount of merchandise put in stock, withdrawn, and on hand at any given time without the necessity of taking a physical count

_____e. A method used to count items in stock by hand, usually taken at least once a year

_____f. Adding to or removing an item or items recorded on inventory cards

_____g. Merchandise that sells quickly

_____h. Visual display screen used with a computer

_____i. A method used in inventory control to maintain a minimum or maximum number of any specific items in stock

_____j. Merchandise kept in warehouse to replace active stock as it is sold

_____k. A method of placing new merchandise behind older merchandise so old items will be sold first

_____l. Sometimes called hard lines which include metal parts, power tools, hand tools, paints, electrical products, and various hardware items kept by the parts suppliers

_____m. Usually nonmetal items such as rubber, paper, gaskets, hoses, belts, and other pliable goods

_____n. How quickly stock moves and is replaced within a certain period of time

1. Posting
2. Mini/max
3. LIFO
4. Perpetual inventory
5. Inventory
6. C.R.T.
7. Emergency order
8. Flag
9. Inventory control
10. Lost sales
11. FIFO
12. Physical inventory
13. Hard parts
14. Intermediate order
15. Turnover
16. Inventory card
17. Stock rotation
18. Soft parts
19. Reserve stock
20. Active stock

_____o. A type of perpetual inventory whereby the first items placed in stock are the first ones taken out

_____p. A type of perpetual inventory whereby the newest items placed in stock are the first ones taken out

_____q. An order placed for special items not regularly stocked

_____r. An order placed after a regular stock order to replenish stock until the regular stock order shipment is received

_____s. Items requested by customers but not carried in stock

_____t. Method using small tags attached to inventory control cards to indicate at a glance whether a part is backordered or out of stock

2. Complete the following list of needs fulfilled by good inventory control.

a. Keeps supplies and parts up-to-date

b. Keeps track of damaged stock

c. Controls improperly binned stock

d. ______________________________

e. ______________________________

f. ______________________________

3. Match items included on inventory cards on the right with their purposes.

_____a. A number assigned to a specific part; sometimes accompanied by a letter for added ease of locating parts

_____b. Minimum and maximum number of parts kept in stock

_____c. Common name of the part

_____d. Popularity code assigned to an item

_____e. Department carrying the item in stock

_____f. Priced and sold as a set

_____g. Items that can be priced and sold individually

1. Class
2. Set
3. Unit pkg
4. Date
5. Part No.
6. Sold
7. Application
8. Bal

______ h. Price of each piece of unit pkg or price of set

______ i. Record of number sold quarterly

______ j. Date parts are sold, received, or inventoried

______ k. Number of items received

______ l. Number of items sold

______ m. Number of items in current inventory

9. Cost
10. Sales
11. Mini/Max
12. Recd
13. Dept

4. Select true statements concerning purposes for taking inventory by placing an "X" in the appropriate blank.

______ a. Helps update stock

______ b. Tabulates sales of each employee

______ c. It shows whether or not all stock is accounted for

______ d. Helps in preparing financial statements for tax purposes or special reports

______ e. Promotes sales production and increases benefits for group insurance

______ f. Helps in preparing lost sales report

______ g. Checks the actual condition of stock

______ h. Decreases the cost of the wholesale price

______ i. It reveals items replaced or superseded

5. Select true statements concerning guidelines for taking a physical inventory by placing an "X" in the appropriate blanks.

______ a. Merchandise should be arranged by shelf or section, or the order in which the merchandise will be recorded on the inventory sheet

______ b. When filling out the description column use a wavy line to indicate the item is the same as the item on the previous line; do not use ditto (") marks on this column

______ c. Do not erase; cross out, using a pen or pencil for corrections

______ d. Write legibly because someone must read what you have written

______ e. Leave spaces blank as needed

______ f. Leave lines blank as needed

______ g. Count merchandise from the bottom shelf first moving from left to right then up

______ h. Quantities of an item should be listed per item with the price entered per item, and then extended and added to the total

6. Select true statements concerning perpetual and physical inventories by placing an "X" in the appropriate blanks.

______a. When a physical inventory is taken, results are compared to the perpetual inventory to see if they equal each other

______b. There is no need for the perpetual inventory when the physical inventory shows the overhead is higher than the gross profit for any given period

______c. When the results are the same, the physical inventory is even

______d. When the physical inventory is less than the perpetual inventory, the physical inventory is short

______e. When the physical inventory is more than the perpetual inventory, the physical inventory is short

7. List six advantages of computers in inventory control.

a. ____

b. ____

c. ____

d. ____

e. ____

f. ____

8. Complete the following list of the national coding system for popularity of parts.

a. A = Fast moving parts

b. B = ____________________

c. C = ____________________

d. D = ____________________

e. W = ____________________

f. N = ____________________

g. ↑ = ____________________

h. [illegible] ____________________

9. Solve the following problems concerning regional coding systems for popularity of parts.

a. When the letter A is used in a regional coding system, it means the part is (slow moving) (fast moving)

b. When the number 3 is used in a regional coding system, it means the part is (medium moving) (average moving)

10. Fill out an inventory control card.

11. Demonstrate the ability to take a physical inventory.

(NOTE: If these activities have not been accomplished prior to the test, ask you instructor when they should be completed.)

INVENTORY CONTROL
UNIT VII

ANSWERS TO TEST

1.

a.	5	e.	12	i.	2	m.	18	q.	7
b.	9	f.	1	j.	19	n.	15	r.	14
c.	16	g.	20	k.	17	o.	11	s.	10
d.	4	h.	6	l.	13	p.	3	t.	8

2. d. Keeps customer satisfaction up
   e. Controls understocking or overstocking
   f. Shows movement and turnover of stock

3.

a.	5	e.	13	i.	10	m.	8
b.	11	f.	2	j.	4		
c.	7	g.	3	k.	12		
d.	1	h.	9	l.	6		

4. a, c, d, f, g, i

5. a, b, c, d, h

6. a, c, d

7. Any six of the following:
   a. Quickly produces an order printout for daily or weekly purchases from a supplier
   b. Produces a clearly printed invoice for the customer
   c. Automatically removes items sold from inventory
   d. Saves time in the posting of items on inventory cards
   e. Can be programmed to set minimums and maximums
   f. Checks stock and identifies superseded items
   g. An "on line" computer can order merchandise automatically
   h. Can check suppliers stock automatically
   i. Can check backorder items

8. b. Medium moving parts
   c. Average moving parts
   d. Slow moving parts
   e. Warehouse stock
   f. New item
   g. Increasing popularity
   h. Decreasing popularity

9. a. Slow moving
   b. Average moving

10. Evaluated to the satisfaction of the instructor

11. Performance skills evaluated to the satisfaction of the instructor

CATALOGING AND PRICING
UNIT VIII

UNIT OBJECTIVE

After completion of this unit, the student should be able to identify the major catalog indexing systems, list types of information found in catalogs, look up parts in catalogs and price sheets, and set up a catalog index system. This knowledge will be evidenced by correctly performing the procedures outlined in the assignment and job sheets and by scoring 85 percent on the unit test.

SPECIFIC OBJECTIVES

After completion of this unit, the student should be able to:

1. Match terms related to cataloging and pricing with their correct definitions.
2. Select from a list the four major catalog indexing systems.
3. Select true statements concerning types of information found in catalogs.
4. Arrange in order the basic steps for looking up a part in a catalog.
5. Select true statements concerning how to price parts correctly.
6. Complete a list of statements concerning the microfiche system and how to use it.
7. Use an engine parts catalog.
8. Use a master gasket catalog.
9. Use a brake parts catalog.
10. Use an exhaust system catalog.
11. Use a chassis parts catalog.
12. Use footnotes from a catalog.
13. Demonstrate the ability to set up a catalog index system.

CATALOGING AND PRICING
UNIT VIII

SUGGESTED ACTIVITIES

I. Provide student with objective sheet.

II. Provide student with information, assignment, and job sheets.

III. Make transparencies.

IV. Discuss unit and specific objectives.

V. Discuss information, assignment, and job sheets.

VI. Invite guest speakers from industry to speak on cataloging and pricing.

VII. Take a field trip to a parts store, a warehouse distributor, or a dealership.

VIII. Films may be obtained from automotive warehouse distributor or jobber.

IX. Student should have access to microfiche reader.

X. Give test.

INSTRUCTIONAL MATERIALS

I. Included in this unit:

  A. Objective sheet

  B. Information sheet

  C. Transparency masters

    1. TM 1--Major Catalog Indexing Systems
    2. TM 2--Major Catalog Indexing Systems--(Continued)
    3. TM 3--Information Found in Catalogs--How to Use This Catalog
    4. TM 4--Information Found in Catalogs--List of Abbreviations
    5. TM 5--Information Found in Catalogs--Model Application, Part Names, and Part Numbers
    6. TM 6--Information Found in Catalogs--Footnotes
    7. TM 7--Information Found in Catalogs--Illustrations
    8. TM 8--Information Found in Catalogs--Exploded Views

9. TM 9--Information Found in Catalogs--Indexes
10. TM 10--Information Found in Catalogs--Indexes (Continued)
11. TM 11--Information Found in Catalogs--Indexes (Continued)
12. TM 12--Information Found in Catalogs--Renumber and Supersedure Lists
13. TM 13--Information Found in Catalogs--Interchange Lists
14. TM 14--Information Found in Catalogs--Shop Hints
15. TM 15--Microfiche System

D. Assignment sheets

1. Assignment Sheet #1--Use an Engine Parts Catalog
2. Assignment Sheet #2--Use a Master Gasket Catalog
3. Assignment Sheet #3--Use a Brake Parts Catalog
4. Assignment Sheet #4--Use an Exhaust System Catalog
5. Assignment Sheet #5--Use a Chassis Parts Catalog
6. Assignment Sheet #6--Use Footnotes from a Catalog

E. Answers to assignment sheets

F. Job Sheet #1--Set Up a Catalog Index System

G. Test

H. Answers to test

II. References:

A. Sumpter, Tom. *Basic Auto Parts Training.* Fairview, OR 97024: 1980.

B. Notgrass, Troy. *Auto Parts Counter Worker.* Austin, TX: Instructional Materials Center, University of Texas at Austin, 1979.

C. Notgrass, Troy. *Auto Partsman, Coordinator's Guide.* Austin, TX: Instructional Materials Center, University of Texas at Austin, 1975.

D. *Automotive Wholesaler Counterman's Handbook.* Chicago, IL: Automotive Service Industry Association, 1977.

E. *Brake Catalog,* Passenger Car Light Truck,17A-100-2, Volume 2. Detroit, MI: Delco, September, 1980.

F. *MOOG Chassis Parts,* Volume Two. St. Louis, MO 63177: Moog Automotive, Inc., February, 1981.

G. *World Parts, Auto Parts for Imports* Catalog. Nashville, TN 37211: 1981.

H. *Victor Oil Seal Catalog,* Form No. MO-310-79. Toledo, OH 43692: 1979.

I. *Wagner Hydraulic Brake Parts for Medium and Heavy Duty Trucks,* Catalog HU-801. Parsippany, NJ 07054: January, 1981.

J. *NAPA Belts/Hose Catalog,* Catalog No. 474-2081A. Denver, CO 80217: 1981.

K. *EVERCO,* Catalog No. HA-81. Licncolnwood, IL 60646: 1981.

L. *Motorcraft Electrical Parts,* Catalog SP2OOP. 1981.

M. *DELCO REMY Switch Catalog,* First Issue, No. 1A-90. Detroit, MI 48243: March, 1977.

N. *Automotive Air Conditioning Illustrated Catalog,* Delco, First Issue, No. 15A-99. Detroit, MI 48243: March 1980.

III. Additional Materials--*Business Management Library,* Automotive Service Industry Association, 230 North Michigan Avenue, Chicago, IL 60601.

CATALOGING AND PRICING
UNIT VIII

INFORMATION SHEET

I. Terms and definitions

A. Footnote--A note of reference, explanation, or comment placed below the text on a given page; usually indicated by a small number or asterisk

B. Supersede--To take the place of

C. Master parts catalog--Provides a means of determining the correct part number for pricing and ordering purposes

D. Illustration lists--Contain exploded views of the parts, usually by groups

(NOTE: They are used to identify a part visually and to determine the general group number; positive identification is then obtained from the master parts catalogs.)

E. Quick reference catalog--Published primarily for independent garage and parts persons, and usually lists only fast moving items like brakes, mufflers, and shock absorbers

II. Major catalog indexing systems (Transparencies 1 and 2)

(NOTE: The most important step in learning how to use catalogs is to familiarize yourself with the indexing system used.)

A. Alphabetical index by manufacturer's name

1. Advantage--Easy to file
2. Disadvantage--Counterperson must know all the products made by each manufacturer

B. Alphabetical index by trade name of product

1. Advantage--Easy to find major trade names
2. Disadvantage--Hard to file "all-products" catalogs which list different items all made by one manufacturer

C. Alphabetical index by common name of product

1. Advantage--Easy to file parts with one word names

   Example: Belts, batteries, starters

2. Disadvantages--Confusion as to where to file two-word parts

   Example: Wheel bearings, piston rings

INFORMATION SHEET

D. Numerical index

Example: Weatherly Index

1. Products are first given a number and then filed numerically

2. Numbers are usually assigned according to grouping arrangement of related articles

3. A numerical index also has a cross index, arranged alphabetically by product

4. Manufacturers can contribute to this system by producing catalogs that can be separated by product and by trade name

5. Advantage--easy to learn order because related articles are grouped together

6. Disadvantage--hard to file mixed items catalogs

III. Types of information found in catalogs

A. "How to Use" page (Transparency 3)

(NOTE: This is usually located at the beginning of the catalog, and the parts person should review this before ever attempting to look up a part for a customer because each catalog is different.)

B. List of abbreviations used in that particular catalog (Transparency 4)

C. Part numbers and names (Transparency 5)

D. Model applications (Transparency 5)

E. Footnotes containing additional information (Transparency 6)

F. Illustrations and exploded views (Transparencies 7 and 8)

G. Model and manufacturer index (Transparency 9)

H. Supersessions and interchangeable parts (Transparency 10)

I. Cross references (Transparency 11)

J. Shop hints for replacement and repairs (Transparency 12)

IV. Basic steps for looking up a part in a catalog

A. Find out and jot down important information about the vehicle

Examples: Make, model, year, engine size

INFORMATION SHEET

B. Determine any accessories or options on vehicle which may affect part selection

Examples: Air-conditioning, power steering, type of transmission

C. See catalog index or table of contents for breakdown of catalog sections

D. Using make, year and model, locate correct page in catalog

E. Select proper part number and BE SURE to read all footnotes that apply to that part number

F. Ask customer if any related parts or tools are needed

G. Write part numbers on pad and check stock

H. If part is available, write part number on sales ticket for customer and refer to price sheet

V. How to price parts correctly

A. Manufacturer's price sheets come in many forms

1. Some have list price, dealer price, and jobber price all together on one sheet

Example:

SUGGESTED PRICES			
PART NO.	LIST PRICE	DEALER PRICE	JOBBER PRICE
A-239	16.50	14.50	12.50
C-416	3.19	2.90	2.79
J-118	69.10	64.29	60.05

INFORMATION SHEET

2. Some have different colored pages for each type of price list

   Examples:

Blue Sheet SUGGESTED JOBBER NET PRICES		Green Sheet SUGGESTED DEALER PRICES	
Catalog Number	Jobber Price	Catalog Number	Jobber Price
2002	11.50	2002	13.50
2003	12.50	2003	14.50
2004	13.50	2004	15.50
2005	14.50	2005	16.50
2006	15.50	2006	17.50
2007	16.50	2007	18.50
2008	17.50	2008	19.50
2009	18.50	2009	20.50

3. These lists quote different prices depending on the classification of the customer

4. It is very important to learn your company's discount procedures, so you will charge customers from the appropriate price sheet

   (NOTE: Typical classifications are: consumers; fleet accounts; dealers; independent garages; industrial accounts; jobbers; government agencies.)

B. Use your price sheet every time you make a sale--do not quote a price from memory

C. Remember--price sheets are CONFIDENTIAL, and some employers do not allow you to quote other than list prices over the phone

D. The "effective date" of a price sheet is important to notice because they must be kept current

E. Pay close attention to information about replaced or superseded lists also shown on most price sheets

   Example:

Effective May 1, 1982

(REPLACES PRICE LIST DATED JULY 1, 1981)

(Prices subject to change without notice)

INFORMATION SHEET

F. Occasionally, a price sheet will price items by the box, rather than individually

1. This is expecially true for small parts such as nuts, bolts, and cotter pins

2. Be sure to charge the customer per item, not per box

Example: Customer comes in to buy 12 headbolts, part number A43. You look in the price sheet and the price for A43 is $3.00 per box. There are 10 headbolts to a box. How much would you charge the customer? $3.60, right?

G. Long part numbers can be confusing--be careful to copy them from the catalog and price sheet correctly

Example: If the part number for a brake drum is BD600010 in the catalog, and you copy it as BD600100--when you go to the price sheet, the price you quote the customer is probably going to be incorrect

H. Customers buying parts for personal use are charged sales tax, but items purchased for resale are usually exempt from sales tax

I. It is helpful to use a straight-edge when reading a price list because the numbers are usually very close together

J. If your handwriting is not clear, PRINT

K. Giving discounts or a special price to obtain a sale is usually poor business--when in doubt about what price to charge a customer--check with your manager!

(NOTE: Keeping catalogs and price sheets up to date is vital because it affects your company's profit, sales, investment, and inventory control as well as the ability to serve customers quickly and efficiently.)

VI. The microfiche system and how to use it (Transparency 13)

(NOTE: Many automotive dealers record their catalog pages on microfilm and use microfiche readers; this eliminates much of the space needed for catalog racks.)

A. Catalog pages are reduced and put in rows of microimages on microfiche cards

B. Since these images are too small to read with the naked eye, microfiche readers are used to magnify the images and project them onto a viewing screen

C. The microfiche cards then are labeled according to year, model, and types of parts shown on each card

INFORMATION SHEET

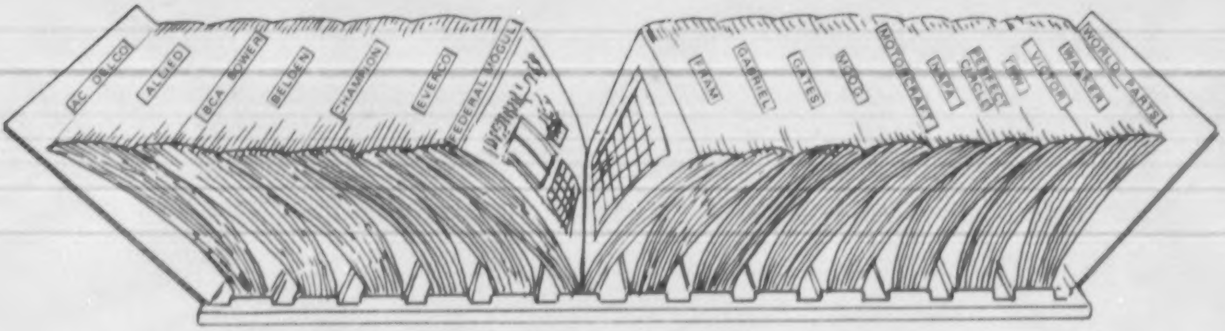
D. When a customer gives you the necessary information to look up a part, you simply locate the corresponding card and place it in the reader

E. Find appropriate grouping and page for part needed

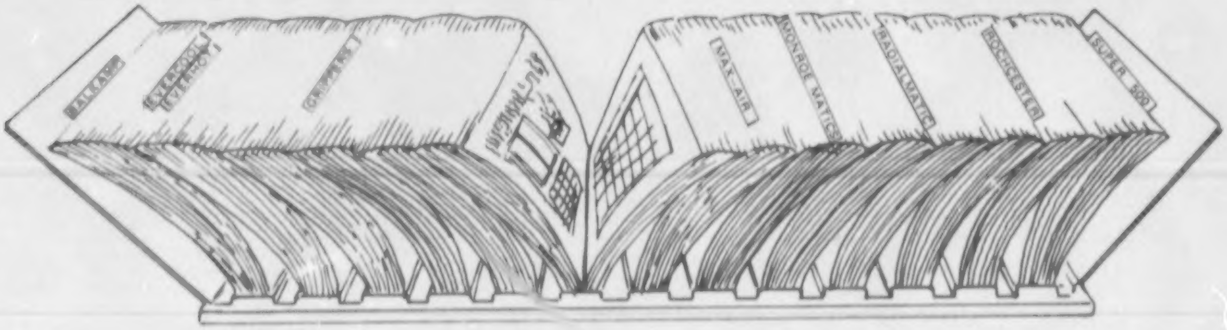
F. Choose correct part number

(NOTE: The same information is given in catalogs and on microfiche cards; the advantage of microfilm is the tremendous amount of material that can be condensed onto one card; for example, a catalog consisting of 1,000 pages or more could easily be contained on one 4" x 6" card.)

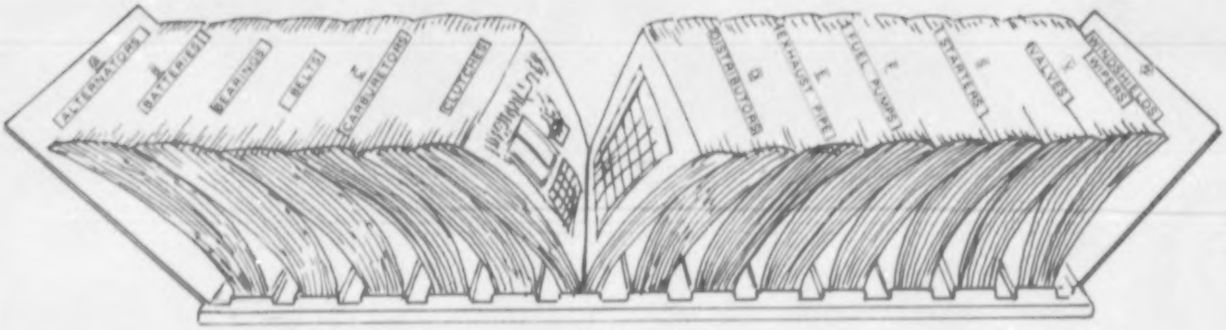
Major Catalog Indexing Systems


AC DELCO
ALLIED
BCA BOWER
BELDEN
CHAMPION
EVERCO
FEDERAL MOGUL
FRAM
GABRIEL
GATES
MOOG
MOTORCRAFT
NAPA
PERFECT CIRCLE
TRW
VICTOR
WALKER
WORLD PARTS

1. Alphabetical index by manufacturer's name


BALKAMP
EVERCOOL
EVERHOT
GRIPPERS
MAX-AIR
MONROE MATIC
RADIALMATIC
ROCHESTER
SUPER 500

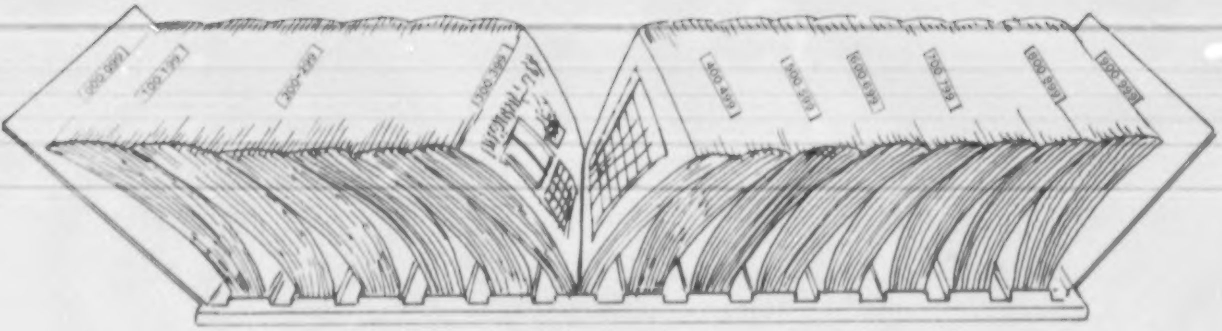
2. Alphabetical index by trade name


ALTERNATORS
BATTERIES
BEARINGS
BELTS
CARBURETORS
CLUTCHES
DISTRIBUTORS
EXHAUST PIPE
FUEL PUMPS
STARTERS
VALVES
WINDSHIELDS WIPERS

3. Alphabetical index by common name of product

Major Catalog Indexing Systems

(Continued)

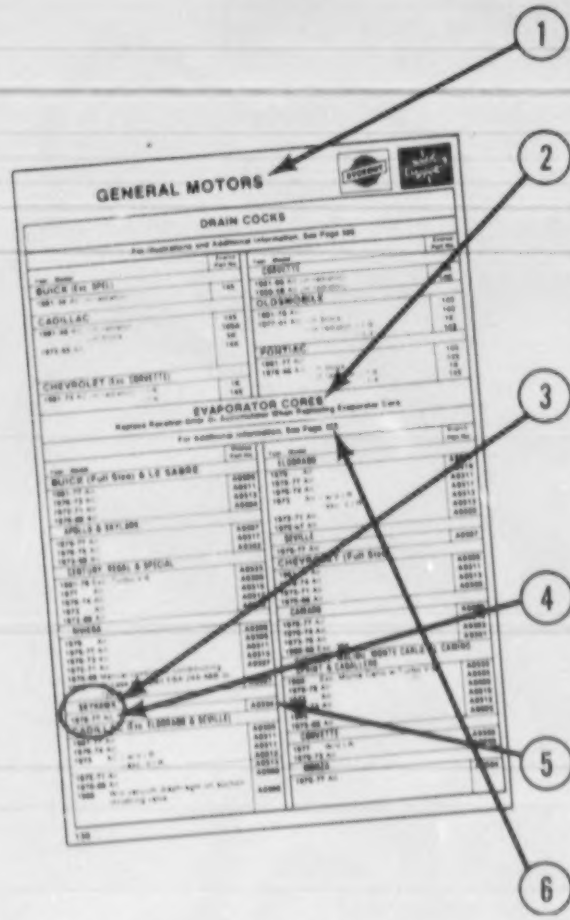

000-099
100-199
200-299
300-399
400-499
500-599
600-699
700-799
800-899
900-999

4. Numerical index

(NOTE: The Weatherly Index is the best known numerical index system; there are ten major groups of numbers in the Weatherly Index.)

Number Groups	Parts That Comprise the Groups
000-099	Centerdrive (Items in the center or drive section of an automobile)
100-199	Frame and Axle
200-299	Body and Fender (Items on the body and in the interior)
300-399	Gaskets and Bearings (Gasket materials and seals also included)
400-499	Cooling System
500-599	Ignition and Lighting
600-699	Fuels and Lubrication
700-799	Shop Supplies
800-899	Hand Tools
900-999	Equipment

Information Found in Catalogs--
How to Use this Catalog



GENERAL MOTORS

DRAIN COCKS

EVAPORATOR CORES

① Turn to auto manufacturer heading (or "Truck") in large bold letters at top of page.

② Find particular type of part listing (Compressors, Heater Valves, Water Outlets, etc.). A detailed index follows on pages 3 to 6 for quicker location of the correct page.

③ Find your vehicle make heading. Major vehicle make headings are shown in larger letters to make them easier to find.

④ Follow down "Year" and "Model" columns from newer to older listings and locate the exact vehicle.

⑤ Read off the correct Everco part number and make the sale.

⑥ For quick identification, page numbers are shown for quick reference to the numerical section. Here you will find additional information, and usually an illustration of the part.

EXAMPLE: A customer needs an evaporator core for a 1978 Buick Skyhawk. Locate (1) the General Motors section, (2) Evaporator Cores, (3) Buick Skyhawk, and (4) 1978-77 — All. The evaporator core you want is **No. A9334.** An illustration and further information may be found on page 335.

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Information Found in Catalogs-- List of Abbreviations

A.	Amperes
A. Clnr.	Air Cleaner
A.C.	Air Conditioning
A.I.R.	Air Injector Reactor
A.P.	Air Pump
A.T.	Automatic Transmission
AC	Air Conditioning
Accy.	Accessory
Adj.	Adjustable
Adjmt.	Adjustment
Air Comp.	Air Compressor
Air Cond.	Air Conditioning
Air Susp.	Air Suspension
Air-Hyd.	Air Over Hydraulic
Almnm.	Aluminum
Alt.	Alternator
AP	Air Pump
Assy.	Assembly
Auto.	Automatic
Aux.	Auxiliary
B-W	Bendix Westinghouse
Brkt	Bracket
B.B.C.	Bumper To Back Of Cab
B.P.	By Pass
Bbl.	Barrel
BP	By Pass
C.I.D.	Cubic Inch Displacement
Cj	Cobra Jet
C.O.E.	Cab Over Engine
C.S.	Crankshaft
Calif.	California
Carb.	Carburetor
Cat.	Caterpillar
CC (cc)	Cubic Centimeter(s)
Chry.	Chrysler
Circ.	Circumference
Co.	Company
Comm.	Commercial
Compr.	Compressor
Cond.	Conditioning(er)
Cont.	Continental
Conv.	Conventional
Convert.	Convertible
Cool.	Cooling
Corp.	Corporation
Cu. Ft.	Cubic Foot (Feet)
Cu. In.	Cubic Inch(es)
Cum.	Cummins
Cust.	Custom
Cyl.	Cylinder
D.R.W.	Dual Rear Wheels
Det. Diesel	Detroit Diesel
Dia.	Diameter
Dlr. Inst.	Dealer Installed
E.E.C.	Evaporative Emission Control
Elec.	Electric
Equip.	Equipped, Equipment
Exc.	Except
Frt.	Front
Ft.	Foot (Feet)
Fuel Inj.	Fuel Injection
Fwd. Cont.	Forward Control
G.M.C.	General Motors Corporation
G.V.W.	Gross Vehicle Weight
Gal.	Gallon
Gas	Gasoline
Gen.	Generator
GM	General Motors
GMC	General Motors Corporation
Gov.	Governor
H.D.	Heavy Duty
H.P.	Horsepower
Hemi.	Hemispherical
Herc.	Hercules
Hi Cap.	High Capacity
Hi Perf.	High Performance
Horiz.	Horizontal
HP	Horsepower
HR	Heater Return
Htr.	Heater
Hyd.	Hydraulic
Hydra.	Hydramatic
I.C.	Inside Circumference
I.D.	Inside Diameter
I.H.C.	International Harvester Company
IHC	International Harvester Company
In.	Inch (Inches)
Inc.	Increased
Incl.	Includes
Inj.	Injection
Install.	Installation
Inst.	Installed
J.S.	Jack Shaft
L	Litre
L-Hd.	L-Head
L-N	Leece Neville
L.C.F.	Low Cab Forward
L.C.I.	Low Cut-In
L.D.	Light Duty
L.H.	Left Hand
L.H.D.	Left Hand Drive
L.P.G.	Liquid Petroleum Gas
Lb. (Lbs.)	Pound(s)
LPG	Liquid Petroleum Gas
Lt.	Left
Lyc.	Lycoming
Mach.	Machine
Man.	Manual
Max.	Maximum
Mfg.	Manufacturing
Mfr.	Manufacturer
Mech.	Mechanical
Min.	Minimum
Mk.	Mark
mm.	Millimeter
Mtd.	Mounted
Mtr.	Motor
M.H.C.	Motorhome Chassis
No.	Number
Nom.	Nominal
O & HR	Oil & Heat Resistant
O.C.	Outside Circumference
O.D.	Outside Diameter
O.E.M.	Original Equipment Manufacturer
O.H.C.	Overhead Cam
O.H.V.	Overhead Valve
OEM	Original Equipment Manufacturer
OHC	Overhead Cam
OHV	Overhead Valve
Opl.	Optional
P.S.	Power Steering
P.T.O.	Power Take-Off
Pass.	Passenger
Perf.	Performance
Pkg.	Package
Prod.	Production
PS	Power Steering
Pt. No.	Part Number
R.H.	Right Hand
R.H.D.	Right Hand Drive
R.P.M.	Revolutions per Minute
Rad. (Rads.)	Radiator(s)
Reg.	Regular
Repl.	Replacement
Rr.	Rear
Rt.	Right
S.P.	Steering Pump
S.R.W.	Single Rear Wheels
Sch. Bus	School Bus
Ser.	Serial
SP	Steering Pump
Spec.	Special
Sta. Wag.	Station Wagon
Std.	Standard
Stg.	Steering
Strt.	Straight
Susp.	Suspension
T.W.	Top Width
T'Glide	Turboglide
Tec.	Tecumseh
Th.	Thick, Thickness
Torq.	Torqmatic
Trans.	Transmission
Trk.	Truck
Turbo	Turbohydramatic
U	Upper
Univ.	Universal
V.	Volts
Vac.	Vacuum
Vent.	Ventilator
Vert.	Vertical
W/	With
W/O	Without
W.	Watts
W.B.	Wheelbase
W.P.	Water Pump
Wauk.	Waukesha
Westh.	Westinghouse
Wgn.	Wagon
Wisc.	Wisconsin
WP	Water Pump
X.C. (XC)	Extra Cooling
&	And

Courtesy of NAPA

Information Found in Catalogs--Model Application, Part Names, and Part Numbers

Model Application
Includes Manufacturer,
Year, Engine Size,
and Other Information

Part Names

Part Numbers

DODGE ALL — STANDARD IGNITION

YEAR	ENGINE	C.I.D.	POINT SET	CONDENSER	CAP	ROTOR	COIL
1972-63	6 Cyl.	All	DPC-303	DCC-32	DHC-305	DRC-303	DGC-13
1972	8 Cyl.	All	DPC-303	DCC-32	DHC-306	DRC-303	DGC-13
1971	8 Cyl.	Exc. 340,440 w/3-2 Bbl. Carb. & 426 C.I.D.	DPC-303	DCC-32	DHC-306	DRC-303	DGC-13
	8 Cyl.	340 w/3-2 Bbl. Carb.	DPC-40	DCC-42	DHC-59	DRC-7	DGC-13
	8 Cyl.	426 & 440 w/3-2 Bbl. Carb.	DPC-42	DCC-42	DHC-59	DRC-7	DGC-13
1970-69	8 Cyl.	Autolite Dist.	DPC-42	DCC-42	DHC-59	DRC-7	DGC-13
		Chrysler Equip.	DPC-303	DCC-32	DHC-306	DRC-303	DGC-13
1968	8 Cyl.	Autolite Dist.	DPC-40	DCC-42	DHC-59	DRC-17	DGC-13
		Chrysler Dist.	DPC-303	DCC-32	DHC-306	DRC-303	DGC-13
1967	8 Cyl.	Autolite Dist.	DPC-40	DCC-42	DHC-59	DRC-7	DGC-13
		Chrysler Dist.	DPC-303	DCC-32	DHC-306	DRC-303	DGC-13
1966	8 Cyl.	All	DPC-303	DCC-32	DHC-306	DRC-303	DGC-13
1965-62	8 Cyl.	Autolite Dist.	DPC-42	DCC-42	DHC-59	DRC-7	DGC-13
		Chrysler Dist.	DPC-303	DCC-32	DHC-304	DRC-303	DGC-13
1961	8 Cyl.	w/IBF-4005E	DPC-47	DCC-42	DHC-59	DRC-7	DGC-13
	8 Cyl.	w/IBS-4006E,F	DPC-42	DCC-42	DHC-59	DRC-7	DGC-13
1960	8 Cyl.	w/IBP-4005C,D	DPC-47	DCC-42	DHC-59	DRC-7	DGC-13
	8 Cyl.	w/IBS-4006E	DPC-42	DCC-42	DHC-59	DRC-7	DGC-13

Courtesy of Motorcraft, Ford Parts and Service Division

Information Found in Catalogs--Footnotes

HEATING AND COOLING

DATSUN

WATER PUMPS

1971-80	**Models**	F10, 310 B210, 210 1200	240Z, 260Z, 280Z, 810 280ZX	510, 610, 710 200SX, 620 Pickup 521 Pickup (1971-78)	510 (1979)	620 Pickup 720 Pickup (1979-80)
	Engines	A12, 13, A14, 15	L24, L26, L24E, L28E	L16, L18, L20B	L20B	L20B
	Water Pump & Clutch	....	....	W53-197 (17)	W53-197	W53-197 (7)
	Water Pump only— (Model Requiring Clutch)	W53-096 (8)•	W53-109 (3)	W53-115 (17)		W53-115
	Water Pump (Models WO/Clutch)	W53-113	....	W53-114		
	Water Pump Housing Gasket	W53-190	W53-191	W53-191	W53-191	W53-191
1968-70	**Models**	240Z (W/Plastic Fan Blade)	510 521 Pickup	520 Pickup 521 Pickup	1600 Sports Car	2000 Sports Car
	Engines	L24	L16	J13	R	U20
	Water Pump & Clutch		W53-197			
	Water Pump only— (Models Requiring Clutch)	W53-109	W53-115			
	Water Pump (Models WO/Clutch)		W53-114	W53-111		W53-117
	Water Pump Housing Gasket	W53-191	W53-191	W53-188	W53-189•	
	Water Pump Block Gasket			W53-194	W53-195•	W53-196•
1966-67	**Models**	411	411	520 Pickup	1600 Sports Car (Rigid Fan)	2000 Sports Car
	Engines	R	J	J13	R	U20
	Water Pump	W53-112 (26)	W53-111	W53-111	W53-119	
	Water Pump Block Gasket	W53-195•	W53-194	W53-194	W53-195•	W53-196•
	Water Pump Housing Gasket	W53-189•	W53-188	W53-188	W53-189•	
1965	**Models**	410	411	520 Pickup	320 Pickup	
	Engines	E1	J	J13		
	Water Pump	W53-110•	W53-111	W53-111	W53-110•	
	Water Pump Block Gasket	W53-194	W53-194	W53-194		
	Water Pump Housing Gasket	W53-188	W53-188	W53-188		

THERMOSTATS

1965-80	Models	F10 310 B210 210 1200	240Z 260Z 280Z 280ZX 810	200SX 510 610 710 620 Pickup 521 Pickup	1600 Sports Car 520 521 Pickup 410 411	2000 Sports Car
	Engines	A12 A13 A14 A15	L24 L24E L26 L28E	L16 L18 L20B	R J13 J E1	U20
	Thermostat 160°	W57-117	W57-117	W57-117	W57-117	W57-117
	Thermostat 180°	W57-104	W57-104	W57-104	W57-104	W57-104
	Thermostat 192°	W57-106				
	Thermostat Gasket	W50-155 (34)	W50-157	W50-157	W50-156 (33)	

RADIATOR CAPS

1969-80	**Models**	All 4 Cylinder Models
	Radiator Cap	W50-108

(3) With plastic fan blade only
(7) With air conditioner and automatic transmission only
(8) 1977-80 210 and B210 with air conditioning only
(17) Except 200SX and 620 pickup with air conditioning
(26) To engine #40000
(33) Except 1600 Sports car with two hole gasket
(34) 1975-80 B210, F10, 310 use W50-164
WO/—Without

• Discontinued—Available until current factory inventory is depleted
NOT ELIGIBLE FOR RETURN

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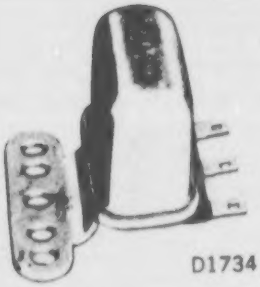
Information Found in Catalogs--Illustrations

HORN RELAYS
DELCO REMY APPLICATIONS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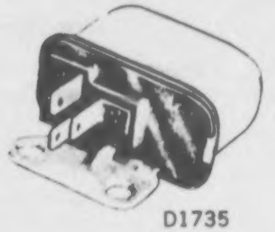
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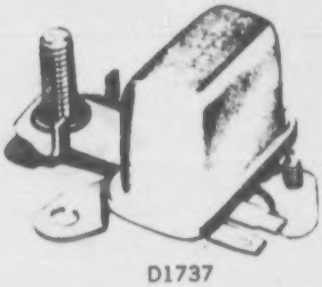
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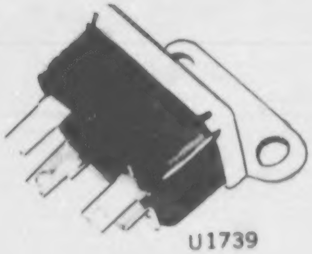
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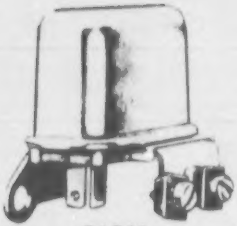
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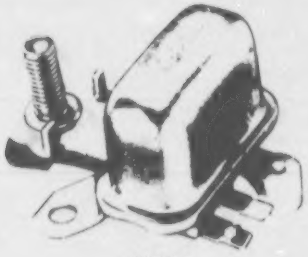
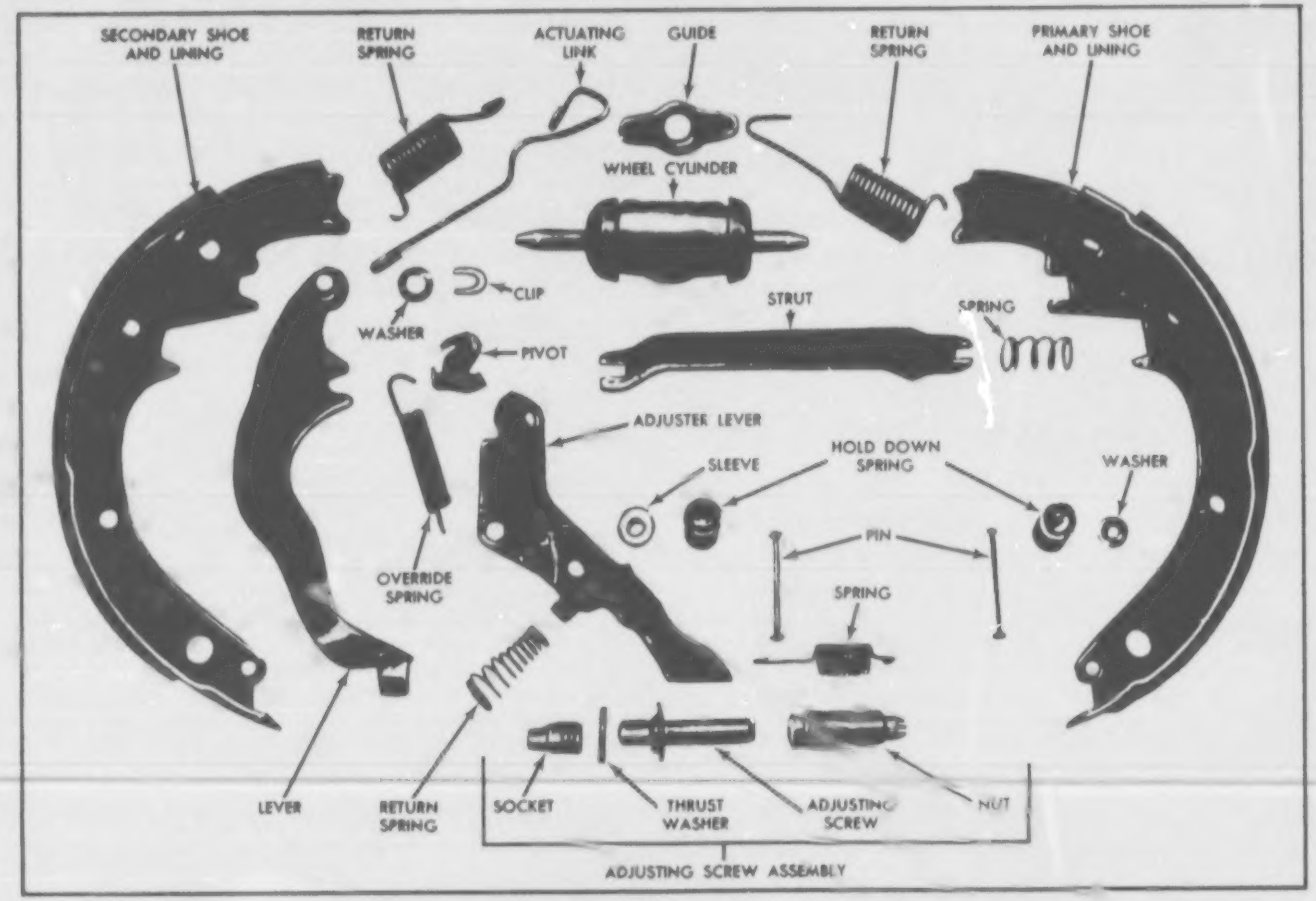

D1742

(NOTE: Many catalogs, especially those selling valves, switches, and other electrical parts will provide illustrations that help to identify exactly which part is used on a particular vehicle.)

Courtesy of Delco

Information Found in Catalogs—Exploded Views


SECONDARY SHOE AND LINING
RETURN SPRING
ACTUATING LINK
GUIDE
RETURN SPRING
PRIMARY SHOE AND LINING
WHEEL CYLINDER
CLIP
WASHER
STRUT
SPRING
PIVOT
ADJUSTER LEVER
HOLD DOWN SPRING
SLEEVE
WASHER
PIN
OVERRIDE SPRING
SPRING
LEVER
RETURN SPRING
SOCKET
THRUST WASHER
ADJUSTING SCREW
NUT
ADJUSTING SCREW ASSEMBLY

(NOTE: Some catalogs have exploded views that show both internal and external parts of a component with part names and/or part numbers; this enables a counterperson to look up all components needed for a given part or assembly.)

Courtesy of Delco

Information Found in Catalogs--Indexes

Model and Manufacturer Index
Passenger Cars and Light Trucks

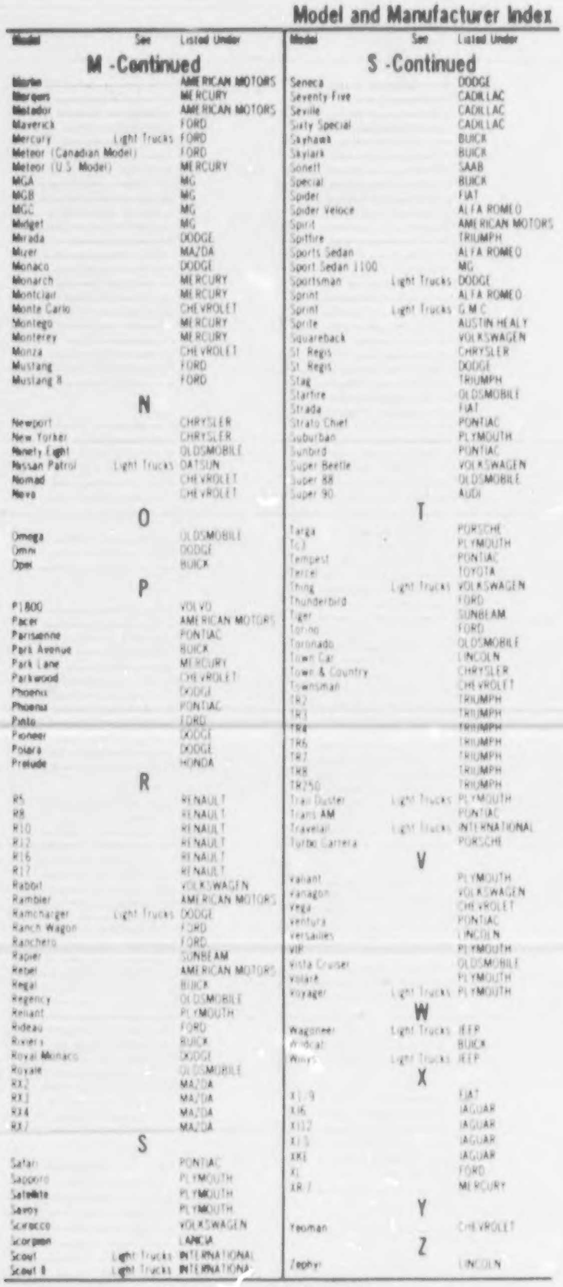
Includes Truck Models Thru 1 Ton Capacity

Model	See	Listed Under
A		
Acadian		PONTIAC
Accord		HONDA
Alfetta		ALPHA ROMEO
Alpine		SUNBEAM
Ambassador		AMERICAN MOTORS
America		AUSTIN
American		AMERICAN MOTORS
AMX		AMERICAN MOTORS
Apollo		BUICK
Aries		DODGE
Arrow		PLYMOUTH
Arrow	Light Truck	PLYMOUTH
Aspen		DODGE
Astre		PONTIAC
Atlantic		AUSTIN
Avanti		STUDEBAKER
Axco	Motor Homes	DODGE
Azusa		FIAT
B		
B210		DATSUN
B1600	Light Trucks	MAZDA
B1800	Light Truck	MAZDA
B2000	Light Truck	MAZDA
Barracuda		PLYMOUTH
Bavaria		BMW
Beaumont		CHEVROLET
Beetle		VOLKSWAGEN
Bel Air		CHEVROLET
Belvedere		PLYMOUTH
Berlina		ALFA ROMEO
Beta		LANCIA
Biscayne		CHEVROLET
Blazer	Light Trucks	CHEVROLET
Bobcat		MERCURY
Bonneville		PONTIAC
Brat	Light Truck	SUBARU
Brava		FIAT
Bronco	Light Trucks	FORD
Brookwood		CHEVROLET
C		
Caballero	Light Trucks	G.M.C.
Calais		CADILLAC
Camaro		CHEVROLET
Capri		MERCURY
Caprice		CHEVROLET
Caravelle		PLYMOUTH
Carina		TOYOTA
Carrera		PORSCHE
Catalina		PONTIAC
Celica		TOYOTA
Centurion		BUICK
Century		BUICK
Challenger		DODGE
Champ		PLYMOUTH
Charger		DODGE
Cherokee	Light Trucks	JEEP
Chevelle		CHEVROLET
Chevette		CHEVROLET
Chevy II		CHEVROLET
Citation		CHEVROLET
Civic		HONDA
CJ	Light Trucks	JEEP
Classic		AMERICAN MOTORS
Colony Park		MERCURY
Colt		DODGE
Comet		MERCURY
Commando	Light Trucks	JEEP
C -Continued		
Commuter		MERCURY
Concord		AMERICAN MOTORS
Concours		CHEVROLET
Continental		LINCOLN
Cooper S		AUSTIN
Cordoba		CHRYSLER
Corolla		TOYOTA
Corona		TOYOTA
Coronet		DODGE
Cortina		FORD (ENGLISH)
Corvair		CHEVROLET
Corvan	Light Trucks	CHEVROLET
Corvette		CHEVROLET
Cosmo		MAZDA
Cougar		MERCURY
Country Sedan		FORD
Country Squire		FORD
Courier	Light Trucks	FORD
Cressida		TOYOTA
Cricket		PLYMOUTH
Crown		TOYOTA
Custom Cruiser		OLDSMOBILE
Customline		FORD
Cutlass		OLDSMOBILE
CVCC		HONDA
D		
DL		SUBARU
D50	Light Trucks	DODGE
Dart		DODGE
Dasher		VOLKSWAGEN
Delmont 88		OLDSMOBILE
Delray		CHEVROLET
Delta 88		OLDSMOBILE
De Ville		CADILLAC
Diplomat		DODGE
Duster		PLYMOUTH
Dynamic 88		OLDSMOBILE
E		
Eagle		AMERICAN MOTORS
Econoline	Light Trucks	FORD
El Camino		CHEVROLET
Escort		FORD
Eldorado		CADILLAC
Electra		BUICK
Elite		FORD
Estate Wagon		BUICK
Executive		PONTIAC
F		
F10		DATSUN
F 85		OLDSMOBILE
Fairlady		DATSUN
Fairlane		FORD
Fairmont		FORD
Falcon		FORD
Fargo	Light Trucks	DODGE
Fastback		VOLKSWAGEN
FE		SUBARU
Fiesta		FORD
Firebird		PONTIAC
Fleetwood		CADILLAC
Formula		PONTIAC
Fox		AUDI
Fury		PLYMOUTH
G		
Galaxie		FORD
G -Continued		
Giulia		ALFA ROMEO
Giulietta		ALFA ROMEO
GF		SUBARU
GL		SUBARU
GLC		MAZDA
Gordini		RENAULT
Granada		FORD
Gran Fury		PLYMOUTH
Grand AM		PONTIAC
Grand LeMans		PONTIAC
Grand Marquis		MERCURY
Grand Prix		PONTIAC
Grand Safari		PONTIAC
Grand Ville		PONTIAC
Gremlin		AMERICAN MOTORS
GT6		TRIUMPH
GTO		PONTIAC
H		
Horizon		PLYMOUTH
Hornet		AMERICAN MOTORS
I		
Imp		SUNBEAM
Impala		CHEVROLET
Invicta		BUICK
Isuzu		BUICK
J		
Javelin		AMERICAN MOTORS
Jeepster	Light Trucks	JEEP
Jet Fire		OLDSMOBILE
Jetstar		OLDSMOBILE
Jetta		VOLKSWAGEN
Jimmy	Light Trucks	G.M.C.
K		
Kaiser Jeep	Light Trucks	JEEP
Karmann Ghia		VOLKSWAGEN
Kingsman		CHEVROLET
Kingswood		CHEVROLET
L		
Lancer		DODGE
Land Cruiser	Light Trucks	TOYOTA
Landrover	Light Trucks	ROVER
Laurentian		PONTIAC
LeBaron		CHRYSLER
LeCar		RENAULT
LeMans		PONTIAC
LeSabre		BUICK
Lil Hustler	Light Truck	DATSUN
Limited		BUICK
LTD		FORD
LTD II		FORD
LUV	Light Trucks	CHEVROLET
Lynx		MERCURY
M		
Magnum		DODGE
Mainline		FORD
Malibu		CHEVROLET
Marauder		MERCURY
Marina		AUSTIN
Mark II		TOYOTA
Mark III		LINCOLN
Mark IV		LINCOLN
Mark V		LINCOLN
Mark VI		LINCOLN

Courtesy of NAPA

Information Found in Catalogs--Indexes

(Continued)



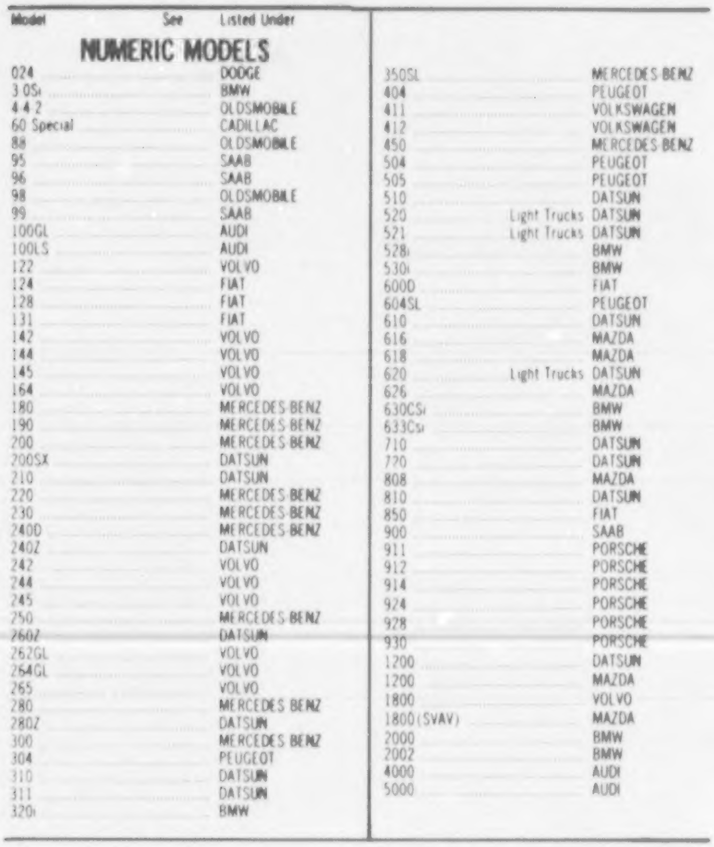
Model and Manufacturer Index

Model	See	Listed Under
M -Continued		
Marlin		AMERICAN MOTORS
Marquis		MERCURY
Matador		AMERICAN MOTORS
Maverick		FORD
Mercury	Light Trucks	FORD
Meteor (Canadian Model)		FORD
Meteor (U.S. Model)		MERCURY
MGA		MG
MGB		MG
MGC		MG
Midget		MG
Mirada		DODGE
Mizer		MAZDA
Monaco		DODGE
Monarch		MERCURY
Montclair		MERCURY
Monte Carlo		CHEVROLET
Montego		MERCURY
Monterey		MERCURY
Monza		CHEVROLET
Mustang		FORD
Mustang II		FORD
N		
Newport		CHRYSLER
New Yorker		CHRYSLER
Ninety Eight		OLDSMOBILE
Nissan Patrol	Light Trucks	DATSUN
Nomad		CHEVROLET
Nova		CHEVROLET
O		
Omega		OLDSMOBILE
Omni		DODGE
Opel		BUICK
P		
P1800		VOLVO
Pacer		AMERICAN MOTORS
Parisienne		PONTIAC
Park Avenue		BUICK
Park Lane		MERCURY
Parkwood		CHEVROLET
Phoenix		DODGE
Phoenix		PONTIAC
Pinto		FORD
Pioneer		DODGE
Polara		DODGE
Prelude		HONDA
R		
R5		RENAULT
R8		RENAULT
R10		RENAULT
R12		RENAULT
R16		RENAULT
R17		RENAULT
Rabbit		VOLKSWAGEN
Rambler		AMERICAN MOTORS
Ramcharger	Light Trucks	DODGE
Ranch Wagon		FORD
Ranchero		FORD
Rapier		SUNBEAM
Rebel		AMERICAN MOTORS
Regal		BUICK
Regency		OLDSMOBILE
Reliant		PLYMOUTH
Rideau		FORD
Riviera		BUICK
Royal Monaco		DODGE
Royale		OLDSMOBILE
RX2		MAZDA
RX3		MAZDA
RX4		MAZDA
RX7		MAZDA
S		
Safari		PONTIAC
Sapporo		PLYMOUTH
Satellite		PLYMOUTH
Savoy		PLYMOUTH
Scirocco		VOLKSWAGEN
Scorpion		LANCIA
Scout	Light Trucks	INTERNATIONAL
Scout II	Light Trucks	INTERNATIONAL
S -Continued		
Seneca		DODGE
Seventy Five		CADILLAC
Seville		CADILLAC
Sixty Special		CADILLAC
Skyhawk		BUICK
Skylark		BUICK
Sonett		SAAB
Special		BUICK
Spider		FIAT
Spider Veloce		ALFA ROMEO
Spirit		AMERICAN MOTORS
Spitfire		TRIUMPH
Sports Sedan		ALFA ROMEO
Sport Sedan 1100		MG
Sportsman	Light Trucks	DODGE
Sprint		ALFA ROMEO
Sprint	Light Trucks	G.M.C.
Sprite		AUSTIN HEALY
Squareback		VOLKSWAGEN
St. Regis		CHRYSLER
St. Regis		DODGE
Stag		TRIUMPH
Starfire		OLDSMOBILE
Strada		FIAT
Strato Chief		PONTIAC
Suburban		PLYMOUTH
Sunbird		PONTIAC
Super Beetle		VOLKSWAGEN
Super 88		OLDSMOBILE
Super 90		AUDI
T		
Targa		PORSCHE
TC3		PLYMOUTH
Tempest		PONTIAC
Tercel		TOYOTA
Thing	Light Trucks	VOLKSWAGEN
Thunderbird		FORD
Tiger		SUNBEAM
Torino		FORD
Toronado		OLDSMOBILE
Town Car		LINCOLN
Town & Country		CHRYSLER
Townsman		CHEVROLET
TR2		TRIUMPH
TR3		TRIUMPH
TR4		TRIUMPH
TR6		TRIUMPH
TR7		TRIUMPH
TR8		TRIUMPH
TR250		TRIUMPH
Trail Duster	Light Trucks	PLYMOUTH
Trans AM		PONTIAC
Travelall	Light Trucks	INTERNATIONAL
Turbo Carrera		PORSCHE
V		
Valiant		PLYMOUTH
Vanagon		VOLKSWAGEN
Vega		CHEVROLET
Ventura		PONTIAC
Versailles		LINCOLN
VIP		PLYMOUTH
Vista Cruiser		OLDSMOBILE
Volare		PLYMOUTH
Voyager	Light Trucks	PLYMOUTH
W		
Wagoneer	Light Trucks	JEEP
Wildcat		BUICK
Willys	Light Trucks	JEEP
X		
X1/9		FIAT
XJ6		JAGUAR
XJ12		JAGUAR
XJS		JAGUAR
XKE		JAGUAR
XL		FORD
XR-7		MERCURY
Y		
Yeoman		CHEVROLET
Z		
Zephyr		LINCOLN

Courtesy of NAPA

Information Found in Catalogs- -Indexes

(Continued)



Model	See	Listed Under
NUMERIC MODELS		
024		DODGE
3 0Si		BMW
4-4-2		OLDSMOBILE
60 Special		CADILLAC
88		OLDSMOBILE
95		SAAB
96		SAAB
98		OLDSMOBILE
99		SAAB
100GL		AUDI
100LS		AUDI
122		VOLVO
124		FIAT
128		FIAT
131		FIAT
142		VOLVO
144		VOLVO
145		VOLVO
164		VOLVO
180		MERCEDES-BENZ
190		MERCEDES-BENZ
200		MERCEDES-BENZ
200SX		DATSUN
210		DATSUN
220		MERCEDES-BENZ
230		MERCEDES-BENZ
240D		MERCEDES-BENZ
240Z		DATSUN
242		VOLVO
244		VOLVO
245		VOLVO
250		MERCEDES-BENZ
260Z		DATSUN
262GL		VOLVO
264GL		VOLVO
265		VOLVO
280		MERCEDES BENZ
280Z		DATSUN
300		MERCEDES BENZ
304		PEUGEOT
310		DATSUN
311		DATSUN
320i		BMW
350SL		MERCEDES-BENZ
404		PEUGEOT
411		VOLKSWAGEN
412		VOLKSWAGEN
450		MERCEDES-BENZ
504		PEUGEOT
505		PEUGEOT
510		DATSUN
520	Light Trucks	DATSUN
521	Light Trucks	DATSUN
528i		BMW
530i		BMW
600D		FIAT
604SL		PEUGEOT
610		DATSUN
616		MAZDA
618		MAZDA
620	Light Trucks	DATSUN
626		MAZDA
630CSi		BMW
633CSi		BMW
710		DATSUN
720		DATSUN
808		MAZDA
810		DATSUN
850		FIAT
900		SAAB
911		PORSCHE
912		PORSCHE
914		PORSCHE
924		PORSCHE
928		PORSCHE
930		PORSCHE
1200		DATSUN
1200		MAZDA
1800		VOLVO
1800 (SVAV)		MAZDA
2000		BMW
2002		BMW
4000		AUDI
5000		AUDI

Courtesy of NAPA

Information Found in Catalogs--Renumber and Supersedure Lists

The following renumber and supersedure lists should be used to update your inventory control systems.

RENUMBERS

The following have been renumbered since the last catalog, and are no longer listed in the catalog or price sheets. You should renumber any inventory you might have of the old numbers immediately.

W10-372 renumbered to W10-814
W11-195 renumbered to W11-196
W27-137 renumbered to W27-136
W27-960 renumbered to W27-962
W31-438 renumbered to W31-541
W32-193 renumbered to W32-170
W33-310 renumbered to W33-311
W35-818 renumbered to W35-809
W36-645 renumbered to W36-615
W41-167 renumbered to W41-107
W41-169 renumbered to W41-108
W41-172 renumbered to W41-108
W43-301 renumbered to W43-336
W73-607 renumbered to W73-610

SUPERSEDURES

The following are shown as superseded in this catalog for the first time. After selling your inventories of the old number, reorder the surviving number. The old (superseded) numbers will remain in the price sheet for one more year.

W10-166 superseded by W10-191
W10-305 superseded by W10-914
W10-367 superseded by W10-806
W10-412 superseded by W10-802
W10-422 superseded by W10-424
W10-433 superseded by W10-800
W10-452 superseded by W10-911
W10-531 superseded by W10-585
W10-567 superseded by W10-566
W20-319 superseded by W20-320
W21-612 superseded by W21-641
W21-613 superseded by W21-642
W21-632 superseded by W21-631
W21-634 superseded by W21-645
W21-681 superseded by W21-647
W27-362 superseded by W27-353
W27-364 superseded by W27-313
W27-958 superseded by W27-957
W27-961 superseded by W27-951
W31-243 superseded by W31-255
W31-402 superseded by W31-424
W31-416 superseded by W31-414
W31-419 superseded by W31-426
W31-435 superseded by W31-424
W31-453 superseded by W31-452
W31-457 superseded by W31-456
W31-462 superseded by W31-463
W31-475 superseded by W31-541
W31-519 superseded by W31-500
W32-759 superseded by W32-703
W33-230 superseded by W33-225
W33-245 superseded by W33-276
W36-813 superseded by W36-819
W36-814 superseded by W36-821
W36-815 superseded by W36-821
W36-825 superseded by W36-823
W40-101 superseded by W40-105
W40-121 superseded by W40-059
W41-115 superseded by W41-101
W50-162 superseded by W50-156
W53-163 superseded by W53-180
W60-247 superseded by W60-246
W70-277 superseded by W70-278
W72-222 superseded by W72-243
W72-310 superseded by W72-406
R47213 superseded by R47205
R47273 superseded by R47272
R47435 superseded by R47436
R47567 superseded by R47542

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Information Found in Catalogs– Interchange Lists

VOLTAGE REGULATOR INTERCHANGE

Because of supersedures and design differences in voltage regulators, the manufacturer's number on the Worldparts replacement unit may not be the same as the defective unit on the car. This sometimes leads to customer confusion.

The following interchanges identify manufacturer's numbers likely to be found on the original regulator and the appropriate Worldparts replacement.

BOSCH

0-190-213-013	W33-201
0-190-213-015	W33-201
0-190-213-031	W33-201
0-190-213-032	W33-201
0-190-213-036	W33-202
0-190-300-067	W33-228
0-190-309-009	W33-228
0-190-350-005	W33-229
0-190-350-014	W33-226
0-190-350-030	W33-203
0-190-350-038	W33-204
0-190-350-040	W33-205
0-190-350-049	W33-226
0-190-350-061	W33-204
0-190-350-063	W33-205
0-190-350-064	W33-205
0-190-350-068	W33-204
0-190-350-069	W33-204
0-190-600-005	W33-225
0-190-600-010	W33-225
0-190-600-016	W33-227
0-190-600-017	W33-250
0-190-601-003	W33-225
0-190-601-006	W33-225
0-190-601-007	W33-225
0-190-601-008	W33-225
0-192-052-001	W33-225
0-192-052-004	W33-276
0-192-052-005	W33-276
0-192-052-006	W33-276
0-192-052-008	W33-276

FD

DHC12-1	W33-274
DNC12-2	W33-206
DNC12-3	W33-258
DNC12-4	W33-272
DNW6B	W33-201
DNW6C	W33-202
DNW6D	W33-203
DNW12D	W33-225
DNW12E	W33-226
DNW240/12-1	W33-204
DNW450/12-1	W33-205
FIA12-1	W33-267
HBA12-2	W33-214
HBA12-2B	W33-255
HBA12-3	W33-259

FD

HBAA12-4	W33-256
HBA12-5	W33-257
HEF12-1	W33-263
HEG12-1	W33-273
HEG12-2	W33-235
HSA12-3	W33-265
HSA12-5	W33-277
LUR270/12-1	W33-238
MAFA12-2	W33-264
MAFA12-3	W33-262
TB1092	W33-276
TCB12-1	W33-208
TDNC12-1	W33-206
THBA12-1	W33-214
TL1199	W33-239

HITACHI

TLIZ-10A	W33-214
TLIZ-10B	W33-214
TLIZ-14	W33-214
TLIZ-14A	W33-214
TLIZ-14B	W33-214
TLIZ-17	W33-214
TLIZ-24	W33-214
TLIZ-25	W33-214
TLIZ-27	W33-265
TLIZ-30	W33-214
TLIZ-31	W33-214
TLIZ-37	W33-206
TLIZ-37	W33-214
TLIZ-41	W33-214
TLIZ-41	W33-206
TLIZ-46	W33-263
TLIZ-48	W33-263
TLIZ-54	W33-265
TLIZ-57	W33-214
TLIZ-57	W33-206
TLIZ-57A	W33-214
TLIZ-57D	W33-214
TLIZ-58	W33-255
TLIZ-61	W33-214
TLIZ-61	W33-206
TLIZ-65	W33-265
TLIZ-66	W33-263
TLIZ-71	W33-214
TLIZ-74	W33-265
TLIZ-79	W33-259
TLIZ-79B	W33-259
TLIZ-82	W33-256

HITACHI

TLIZ-82B	W33-256
TLIZ-82D	W33-256
TLIZ-85B	W33-257
TLIZ-85D	W33-257
TLIZ-87	W33-273
TLIZ-94	W33-277

LUCAS

37182	W33-244
37290	W33-237
37563	W33-238
37565	W33-239
37582	W33-270
37586	W33-241
37595	W33-269

MITSUBISHI

RL2220B	W33-214
RL2122A	W33-222
RLA2220A	W33-264
RLA2220B	W33-214
RLB-2220A	W33-264
RLB-2220A5	W33-262
RLB-2220B	W33-264
RLB-2220B	W33-214
RQA-2220B	W33-214
RQB-2220B	W33-214
RQB-2220B1	W33-255

MOTOROLA

8RH-2011	W33-278
9RC-2006	W33-279

NEW ERA

AVR-551	W33-206
AVR-553	W33-208
AVR-558	W33-258
AVR-560	W33-274
AVR-562	W33-274
AVR-569	W33-272
AVR-734	W33-276
AVR-811	W33-214
AVR-812	W33-255
AVR-814	W33-256
AVR-815	W33-263
AVR-816	W33-257
AVR-820	W33-259
AVR-821	W33-273
AVR-830	W33-265
AVR-832	W33-277

NEW ERA

AVR 951	W33-264
AVR 953	W33-222
AVR 954	W33-262

NIPPONDENSO

026000-0810	W33-208
026000-0811	W33-208
026000-1102-5	W33-206
026000-1103	W33-206
026000-1130	W33-264
026000-1202	W33-206
026000-1321	W33-206
026000-1341	W33-206
026000-1361	W33-264
026000-1410	W33-208
026000-1720	W33-206
026000-1730	W33-206
026000-1740	W33-206
026000-1741	W33-206
026000-1750	W33-206
026000-1751	W33-206
026000-1760	W33-264
026000-1762	W33-264
026000-1800	W33-206
026000-1801	W33-206
026000-1940	W33-264
026000-1990	W33-263
026000-2121	W33-206
026000-2130	W33-264
026000-2340	W33-274
026000-2341	W33-274
026000-2410	W33-274
026000-2411	W33-274
026000-2421	W33-274
026000-2430	W33-206
026000-2431	W33-206
026000-2510	W33-273
026000-2540	W33-258
026000-2580	W33-274
026000-2680	W33-258
026000-2700	W33-235
026000-2720	W33-258
026000-2880	W33-264
026000-2900	W33-274
026000-2930	W33-272
026000-2940	W33-272
026000-2960	W33-272
026000-3190	W33-258
026000-3210	W33-273
026000-3220	W33-272
026000-3310	W33-272
026000-3330	W33-258
126000-0100	W33-236
126000-0050	W33-236

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Information Found in Catalogs--Shop Hints

BRAKE DRUM RECOMMENDATIONS

1. Drums which require removal of hub from old hub and drum assembly and reinstallation with new studs, rivets or bolts should be checked for concentricity or distortion before installation on vehicle. Distortion of these assemblies during mounting of hub to new drum may require truing on an appropriate drum lathe. Drums with taper or out-of-roundness exceeding 0.006 inch (0.004 inch for Chrysler Total Contact brakes) are unfit for service and should be turned.
2. Check to see the flange of the hub is clean and smooth. Remove any rust or corrosion.
3. Check with a straight edge or on a lathe if possible, to insure the hub is true. If not, it should be refaced or replaced.
4. If using old bolts, check to see the threads are true and clean, free from any nicks or burrs.
5. There should not be any paint in the hub hole.
6. Rust preventive should be removed from braking surface.
7. Check to see that the brake drum fits perfectly to the hub face.
8. AVOID THE USE OF POWER IMPACT TOOLS WHEN ASSEMBLING THE HUB AND DRUM. TOO MUCH TORQUE CAN RESULT IN DRUM DISTORTION.

For other pertinent information and specifications regarding brake drums, refer to Delco Drum Brake Service Manual 17D-11.

DELCO HUB AND ROTOR SERVICE INSTRUCTIONS

Hub and rotors are factory mounted and precision machined as complete assemblies ready for service installation.

Do not remove or separate hub from rotor.

Remove rust inhibitor from both brake surfaces.

Rotor replacement is mandatory when the rotor has been machined and cannot be restored to manufacturer's specifications.

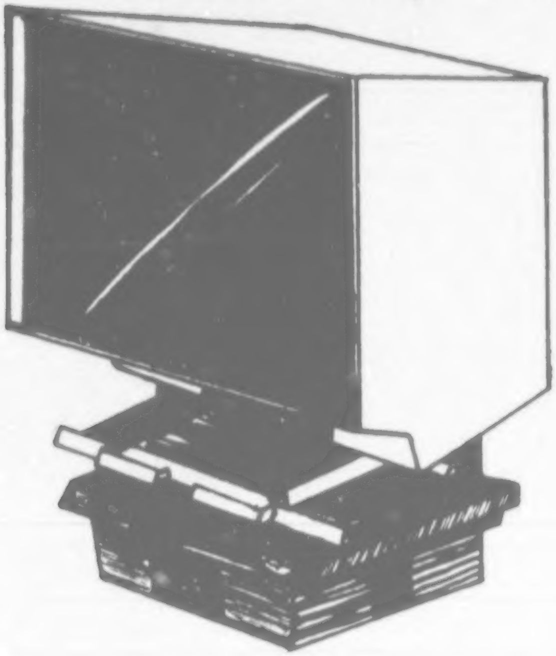
Similarly, a rotor which apparently looks good but is below discard thickness dimension must be replaced, to comply with State Motor Vehicle Inspection or State Laws.

For other pertinent information and specifications regarding rotors (disc), refer to Delco Single Piston Disc Brake Service Manual 17D-13.

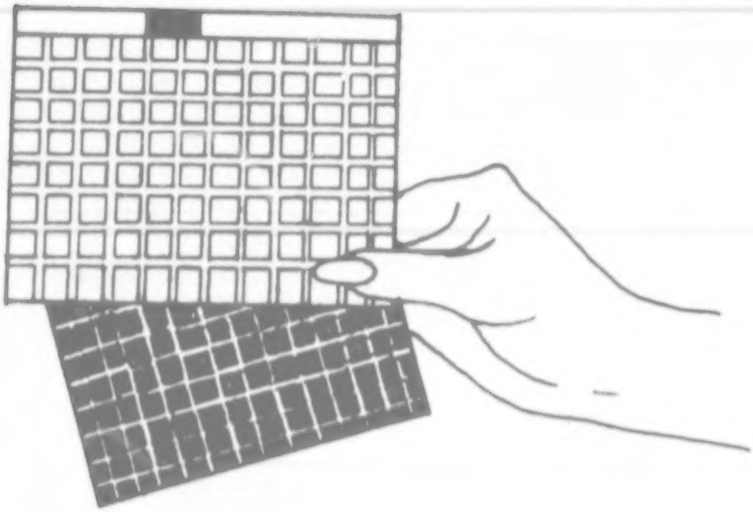
(NOTE: Shop hints represent collective expertise; when a customer is planning repair work that is covered in catalog shop hints, it's good public relations to let the customer read the materials.)

Courtesy of Delco

Microfiche System



Mcrofiche Reader



Microfiche Cards

CATALOGING AND PRICING
UNIT VIII

ASSIGNMENT SHEET #1--USE AN ENGINE PARTS CATALOG

Directions: Answer the following questions using available catalogs and price sheets.

A. Locate and study the "How to Use" section of an appropriate engine parts catalog.

(NOTE: This section is usually located on the inside of the front cover or the first pages of the catalog; some catalogs may not have a "How to Use" section, so the index will have to be used to locate needed sections and information.)

B. Locate and study the symbol and suffix sections of the catalog and list the symbol or suffix for the following major engine parts.

1. ________________ Valve lifter
2. ________________ Chrome ring set
3. ________________ Timing gear
4. ________________ Hollow stem valve
5. ________________ Valve stem oil seal
6. ________________ Valve spring
7. ________________ Cast iron type piston
8. ________________ Bronze backed babbit bearing

C. Locate and identify the make of the car, using the following information.

Model	Make
1. Bel-air	________________
2. Swinger	________________
3. Sportabout	________________
4. TR3	________________
5. Savoy	________________
6. Jetstar	________________
7. Judge	________________

ASSIGNMENT SHEET #1

	Model	Make
8.	Royale	__________
9.	Grande	__________
10.	Excalibur	__________

D. Given the following information, look up and list the part no. and prices for the following:

1975 Starfire 231 cu. in. V-6					
				Price	
Quantity	Part no.	Description	List	Net	Total
1		Valve lifter (stock)			
6		Piston (stock)			
1		Piston ring set (chrome)			
1		Oil pump (stock)			
2		Intake valve (stock)			
4		Exhaust valve (stock)			
12		Valve seals (positive type)			

E. Using the part numbers from the previous section, locate and list the application using the numerical listing section of the catalog.

		Part no.	Application
1.	Valve lifter	__________	________________
2.	Piston (stock)	__________	________________
3.	Piston ring set	__________	________________
4.	Oil pump	__________	________________
5.	Intake valve	__________	________________
6.	Exhaust valve	__________	________________
7.	Valve seals	__________	________________

CATALOGING AND PRICING
UNIT VIII

ASSIGNMENT SHEET #2--USE A MASTER GASKET CATALOG

A. Locate and study the "How to Use" section of an appropriate master gasket catalog.

(NOTE: If there is not a "How to Use" section, study the index and/or table of contents section to become familiar with the various sections.)

B. Locate and list suffix or prefix letters that indicate the following gaskets.

	Suffix or prefix
1. Head gasket set	
2. Timing cover gasket	
3. Pan gasket	
4. Full gasket set	
5. Intake manifold gasket	
6. Fuel pump gasket	
7. Water pump gasket	
8. Exhaust pipe	
9. Valve cover set	
10. Fuel pump gasket	
11. Water outlet gasket	

C. Given the following information, look up and list the part number and prices.

1980 Fairmont, 250 cu. in., (4.1 l.) eng. 6 cyl. with C-3 transmission

		Price	
	Part no.	List	Net
1. Valve cover gasket set			
2. Intake manifold set			
3. Timing cover set			
4. Head gasket set			
5. Transmission pan gasket			
6. Rear wheel bearing retainer			

ASSIGNMENT SHEET #2

D. Locate and study the "Superseded By" section of the catalog.

(NOTE: Some catalogs may not have the "Superseded By" section incorporated in the catalog but a separate section; also make note of the abbreviations used to designate the current status of the part numbers.)

CATALOGING AND PRICING
UNIT VIII

ASSIGNMENT SHEET #3--USE A BRAKE PARTS CATALOG

A. Locate and study the "How to Use" section of an appropriate brake parts catalog; make note of how the catalog is sectioned or divided into groupings of parts.

B. Study the Application Listings section of the catalog.

C. Locate and list the names for the following abbreviations.

1. Adj. ____________________
2. Brk.(s) ____________________
3. D.B. ____________________
4. Dia. ____________________
5. M. cyl. ____________________
6. O.D. ____________________
7. Pur. brks. ____________________
8. Std. ____________________
9. Sec. ____________________
10. Wo/ ____________________

D. Given the following information, locate and list the part numbers and prices of parts for a 1979 Firebird, V-8 engine, standard power disc front brakes, rear drum brakes.

			Price		
Quantity	Part no.	Description	List	Net	Total
1		Disc pad set			
1		Rear brk. shoes			
1		Master cylinder			
2		Repair kit, caliper wo/piston			
2		Repair kit, wheel cyl. wo/pist.			
2		Shoe return spring kit			
2		Shoe hold down spring kit			
1		Left self adjuster repair kit			
1		Right self adjuster repair kit			

E. Locate and study the general information section as well as the illustrated section of the catalog.

CATALOGING AND PRICING
UNIT VIII

ASSIGNMENT SHEET #4--USE AN EXHAUST SYSTEM CATALOG

Directions: Answer the following questions using available catalogs and price sheets.

A. Locate and study the "How to Use" section of an appropriate exhaust system catalog.

B. Study the table of contents or index and pay close attention to supplementary information included in the catalog.

(NOTE: Supplementary information can include information such as model year identification, vehicle model index, abbreviations, cross reference charts, gasket and flange charts, numerical listing by part number, etc.)

C. Given the following information, look up and list the part numbers and prices for a 1980 Corolla Tercel 4 cylinder with a 1.5 liter engine.

Quantity	Part no.	Description	List	Net	Total
1		Tailpipe			
1		Exh. header pipe			
1		Connector pipe			
1		Muffler clamp			
1		Rear insulator			

D. Locate and list the abbreviations for the following parts.

Part name	Abbreviation
1. Barrel	____________
2. Bracket	____________
3. California	____________
4. Clamp	____________
5. Coupe	____________
6. Except	____________
7. Exhaust	____________
8. Flange	____________
9. Heavy duty	____________
10. Hanger	____________
11. Inside diameter	____________
12. Left hand	____________

ASSIGNMENT SHEET #4

13. Not available __________
14. Not required __________
15. Right hand __________
16. With __________
17. Without __________

E. Locate and list the following information from the accessory section.

1. Different types of full circle clamps
   - a) ____________________
   - b) ____________________
   - c) ____________________
2. Different types of straight tubing
   - a) ____________________
   - b) ____________________
   - c) ____________________
3. Different types of connectors
   - a) ____________________
   - b) ____________________
   - c) ____________________
4. Different types of reducers
   - a) ____________________
   - b) ____________________
   - c) ____________________
   - d) ____________________
5. Different types of clamps
   - a) ____________________
   - b) ____________________
   - c) ____________________
   - d) ____________________

ASSIGNMENT SHEET #4

F. A customer wants to convert his single exhaust system to dual exhaust. His car is a 1973 Camaro with a 350 C.I.D. engine. The existing single exhaust needs replacement. List all parts and prices to complete the conversion. Use the dual conversion listings.

CATALOGING AND PRICING
UNIT VIII

ASSIGNMENT SHEET #5--USE A CHASSIS PARTS CATALOG

Directions: Answer the following questions using available catalogs and price sheets.

A. Locate and study the "How to Use" section of an appropriate chassis parts catalog.

(NOTE: As stated earlier, some catalogs will not have a "How to Use" section so the table of contents or index will have to be studied.)

B. A customer calls an order in wanting chassis parts for a 1978 Corvette. The parts ordered are both lower ball joints, right and left upper control arm bushings, idler arm, and the left outer tie rod. List all parts and prices to fill the order.

Quantity	Part no.	Description	List	Net	Total

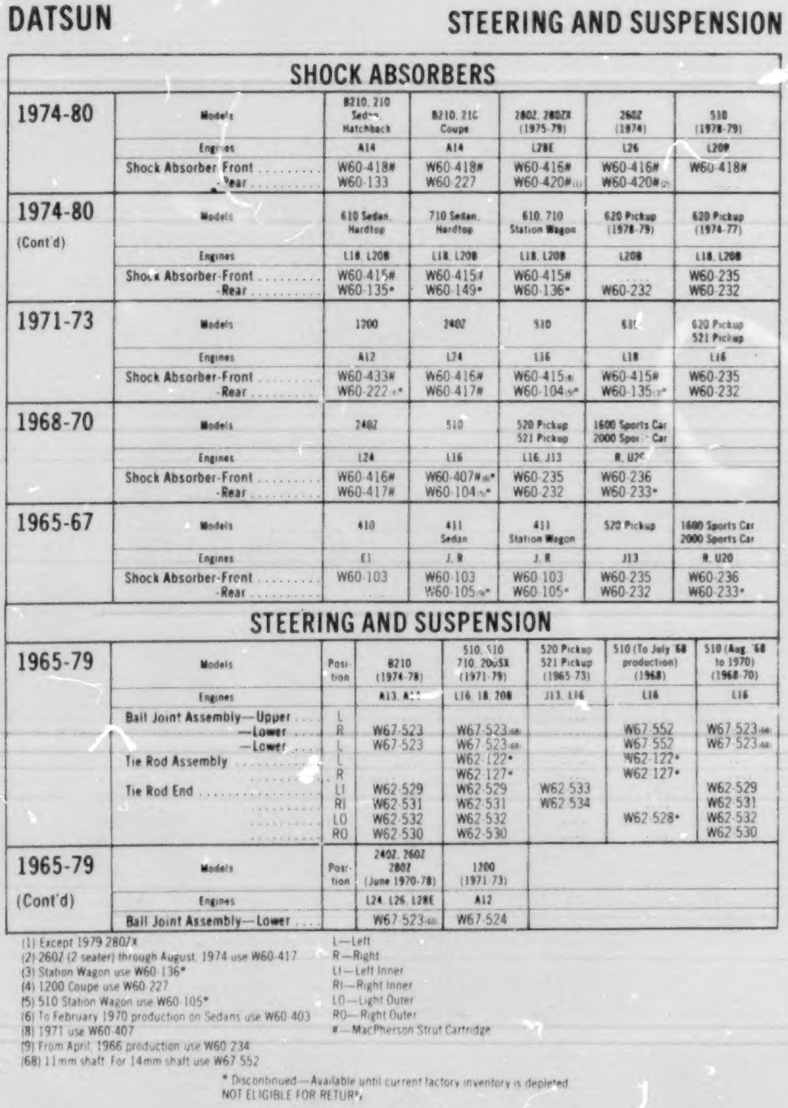
C. Use the cross reference section of your catalog to cross reference numbers from the parts in the previous question to General Motors part number.

Part	Your part numbers	General Motors numbers
1) Ball joint		
2) Upper control arm bushings		
3) Idler arm		
4) Tie rod		

CATALOGING AND PRICING
UNIT VIII

ASSIGNMENT SHEET #6--USE FOOTNOTES FROM A CATALOG

Directions: Use this sample page from a catalog to answer the questions on the following page.



DATSUN **STEERING AND SUSPENSION**

SHOCK ABSORBERS

1974-80	Models	B210, 210 Sedan, Hatchback	B210, 210 Coupe	280Z, 280ZX (1975-79)	260Z (1974)	510 (1978-79)
	Engines	A14	A14	L28E	L26	L20B
	Shock Absorber-Front	W60-418#	W60-418#	W60-416#	W60-416#	W60-418#
	-Rear	W60-133	W60-227	W60-420#(1)	W60-420#(2)	....
1974-80 (Cont'd)	Models	610 Sedan, Hardtop	710 Sedan, Hardtop	610, 710 Station Wagon	620 Pickup (1978-79)	620 Pickup (1974-77)
	Engines	L18, L20B	L18, L20B	L18, L20B	L20B	L18, L20B
	Shock Absorber-Front	W60-415#	W60-415#	W60-415#	....	W60-235
	-Rear	W60-135*	W60-149*	W60-136*	W60-232	W60-232
1971-73	Models	1200	240Z	510	610	620 Pickup 521 Pickup
	Engines	A12	L24	L16	L18	L16
	Shock Absorber-Front	W60-433#	W60-416#	W60-415(8)	W60-415#	W60-235
	-Rear	W60-222(4)*	W60-417#	W60-104(5)*	W60-135(3)*	W60-232
1968-70	Models	240Z	510	520 Pickup 521 Pickup	1600 Sports Car 2000 Sports Car	
	Engines	L24	L16	L16, J13	R, U20	
	Shock Absorber-Front	W60-416#	W60-407#(6)*	W60-235	W60-236	
	-Rear	W60-417#	W60-104(5)*	W60-232	W60-233*	
1965-67	Models	410	411 Sedan	411 Station Wagon	520 Pickup	1600 Sports Car 2000 Sports Car
	Engines	E1	J, R	J, R	J13	R, U20
	Shock Absorber-Front	W60-103	W60-103	W60-103	W60-235	W60-236
	-Rear	...	W60-105(9)*	W60-105*	W60-232	W60-233*

STEERING AND SUSPENSION

1965-79	Models	Position	B210 (1974-78)	510, 510 710, 200SX (1971-79)	520 Pickup 521 Pickup (1965-73)	510 (To July '68 production) (1968)	510 (Aug. '68 to 1970) (1968-70)
	Engines		A13, A14	L16, 18, 20B	J13, L16	L16	L16
	Ball Joint Assembly—Upper	L					
	—Lower	R	W67-523	W67-523(68)		W67-552	W67-523(68)
	—Lower	L	W67-523	W67-523(68)		W67-552	W67-523(68)
	Tie Rod Assembly	L		W62-122*		W62-122*	
		R		W62-127*		W62-127*	
	Tie Rod End	LI	W62-529	W62-529	W62-533		W62-529
		RI	W62-531	W62-531	W62-534		W62-531
		LO	W62-532	W62-532		W62-528*	W62-532
		RO	W62-530	W62-530			W62-530
1965-79 (Cont'd)	Models	Position	240Z, 260Z 280Z (June 1970-78)	1200 (1971-73)			
	Engines		L24, L26, L28E	A12			
	Ball Joint Assembly—Lower		W67-523(68)	W67-524			

(1) Except 1979 280ZX
(2) 260Z (2 seater) through August, 1974 use W60-417
(3) Station Wagon use W60-136*
(4) 1200 Coupe use W60-227
(5) 510 Station Wagon use W60-105*
(6) To February 1970 production on Sedans use W60-403
(8) 1971 use W60-407
(9) From April, 1966 production use W60-234
(68) 11mm shaft. For 14mm shaft use W67-552

L—Left
R—Right
LI—Left Inner
RI—Right Inner
LO—Light Outer
RO—Right Outer
#—MacPherson Strut Cartridge

* Discontinued—Available until current factory inventory is depleted
NOT ELIGIBLE FOR RETURN

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ASSIGNMENT SHEET #6

A. A walk-in customer orders a set of front and rear shocks for a Datsun 280Z with an L-28E engine. The production date of the car is 9-75. List the part numbers necessary to fill this order.

	Part number
1. Front shocks	________________
2. Rear shocks	________________

B. A call-in customer orders a set of rear shocks for a 1966 Datsun 411 Sedan, production date 7-66. List the correct part number to fill this order; what other information does the catalog tell about this part number?

1. Part number: ____________________

2. Other information: ____

C. L and D Auto Repair ordered a right inner tie rod end and a lower left ball joint with a 14mm shaft, for a 1979 Datsun 610. List the part numbers necessary to fill this order.

	Part number
1. Right inner tie rod	____________________
2. Lower left ball joint	____________________

D. What does the footnote tell you about the replacement front shocks for a 1974 Datsun B210?

1. Answer: ____

E. If a customer has a 1972 Datsun 610 station wagon with an L-18 engine, would the replacement number for the rear shocks be W60-135?

1. Yes_____? No_____?

2. If not, why? ____

CATALOGING AND PRICING
UNIT VIII

ANSWERS TO ASSIGNMENT SHEETS

Assignment Sheet #1

(NOTE: All answers not listed should be evaluated according to available materials and to the satisfaction of the instructor.)

C. 1. Chevrolet
2. Dodge
3. American Motors
4. Triumph
5. Plymouth
6. Oldsmobile
7. Pontiac
8. Oldsmobile
9. Ford
10. Chevrolet

Assignment Sheet #2--All items should be evaluated to the satisfaction of the instructor

Assignment Sheet #3

C. 1. Adjusting or adjuster
2. Brakes
3. Disk brakes
4. Diameter
5. Master cylinder
6. Outside diameter
7. Power brakes
8. Standard
9. Secondary
10. Without

Assignment Sheet #4

D. 1. Bbl.
2. Brkt.
3. Calif.
4. Clmp.
5. Cpe.
6. Exc.
7. Exh.
8. Flng.
9. H.D.
10. Hngr.
11. I.D.
12. L.H.
13. N.A.
14. N.R.
15. R.H.
16. W/
17. Wo/

Assignment Sheet #5--All items should be evaluated to the satisfaction of the instructor

Assignment Sheet #6

A. 1. W60-416
2. W60-420

B. 1. W60-234
2. Discontinued

ANSWERS TO ASSIGNMENT SHEETS

C. 1. W62-531
   2. W67-552

D. 1. McPherson strut cartridge

E. 1. No
   2. Station wagon uses W60-136

CATALOGING AND PRICING
UNIT VIII

JOB SHEET #1--SET UP CATALOG INDEX SYSTEM

I. Equipment and materials

- A. Catalog racks and dividers or tabs
- B. Assorted catalogs and price sheets

  (NOTE: There should be at least 15 different catalogs if possible.)

- C. Counter or table

II. Procedure

- A. Set up racks according to the number of catalogs
- B. Choose one of the four major catalog indexing systems
  1. Alphabetical by manufacturer's name
  2. Alphabetical by trade name
  3. Alphabetical by common name
  4. Numerical
- C. Arrange catalogs and price sheets according to the index system to be used
- D. Prepare and insert dividers and/or tabs for proper separation of catalogs and price sheets
- E. Check with instructor when completed

CATALOGING AND PRICING
UNIT VIII

NAME ______________________________

TEST

1. Match the terms on the right with their correct definitions.

______a. A note of reference, explanation or comment placed below the text on a given page; usually indicated by a small number or asterisk

______b. To take the place of

______c. Provides a means of determining the correct part number for pricing and ordering purposes

______d. Contains exploded views of the parts, usually by groups

______e. Published primarily for independent garage and parts persons, and usually lists only fast moving items like brakes, mufflers, and shock absorbers

1. Supersede
2. Quick Reference Catalog
3. Footnote
4. Master Parts Catalog
5. Illustration lists

2. Select the four major catalog indexing systems from the following list by placing an "X" in the appropriate blanks.

______a. Alphabetical index by manufacturer's name

______b. Alphabetical by copyright and publishing company

______c. Alphabetical index by common name of product

______d. Numerical index of copyrights

______e. Numerical index

______f. Alphabetical index by trade name of product

3. Select true statements concerning the types of information found in catalogs by placing an "X" in the appropriate blanks.

______a. "How to Use" page

______b. Safety in the garage--commercial first aid

______c. List of abbreviations used in that particular catalog

______d. Part numbers and names

______e. Articles of mixed items related to catalogs ______f. Model applications

______g. Footnotes containing additional information

______h. Illustrations and exploded views

______i. Model and manufacturer index

______j. Supersessions and interchangeable parts

______k. Related articles including advantages and disadvantages

______l. Cross references

______m. Shop hints for replacement and repairs

4. Arrange in order the basic steps for looking up a part in a catalog by placing the proper sequence number in the appropriate blank.

______a. Write part numbers on pad and check stock

______b. Using make, year and model, locate correct page in catalog

______c. Find out and jot down important information about the vehicle

______d. See catalog index or table of contents for breakdown of catalog sections

______e. If part is available, write part number on sales ticket for customer and refer to price sheet

______f. Detemine any accessories or options on vehicle which may affect part selection

______g. Ask customer if any related parts or tools are needed

______h. Select proper part number and be sure to read all footnotes that apply to that part number

5. Select true statements concerning how to price parts correctly by placing an "X" in the appropriate blanks.

(NOTE: For a statement to be true, all parts of the statement must be true.)

______a. Manufacturer's price sheets come in many forms

1) Some have list price, dealer price, and jobber price all together on one sheet

2) Some have different colored pages for each type of price list

3) These lists quote different prices depending on the classification of the customer

4) It is very important to learn your company's discount procedures, so you will charge customers from the appropriate price sheet

______b. Use your price sheet only for different orders--most prices can be quoted from memory

______c. Remember--price sheets are CONFIDENTIAL, and some employers do not allow you to quote other than list prices over the phone

______d. The "effective date" of a price sheet is important to notice because they must be kept current

______e. Pay close attention to information about replaced or superseded lists also shown on most price sheets

______f. Occasionally, a price sheet will price items by the box, rather than individually

1) This is expeciaily true for small parts such as nuts, bolts, and cotter pins

2) Be sure to charge the customer per item, not per box

______g. Long part numbers can be confusing--be careful to copy them from the catalog and price sheet correctly

______h. Customers buying parts for personal use are charged sales tax, and items purchased for resale are usually taxed too

______i. It is helpful to use a straight-edge when reading a price list because the numbers are usually very close together

______j. If your handwriting is not clear, have someone else take care of the order

______k. Giving discounts or a special price to obtain a sale is usually poor business--when in doubt about what price to charge a customer--**check with your manager!**

6. Complete the following list of items concerning the microfiche system and how to use it.

a. Catalog pages are reduced and put in rows of microimages on microfiche cards

b. ____

____

c. The microfiche cards then are labeled according to year, model of vehicle, and types of parts shown on the card

d. ____

____

e. Find appropriate grouping and page for part needed

f. Choose correct part number

7. Use an engine parts catalog.

8. Use a master gasket catalog.

9. Use a brake parts catalog.

10. Use an exhaust system catalog.

11. Use a chassis parts catalog.

12. Use footnotes from a catalog.

13. Demonstrate the ability to set up a catalog index system.

(NOTE: If these activities have not been accomplished prior to the test, ask your instructor when they should be completed.)

CATALOGING AND PRICING
UNIT VIII

ANSWERS TO TEST

1. a. 3
   b. 1
   c. 4
   d. 5
   e. 2

2. a, c, e, f

3. a, c, d, f, g, h, i, j, l, m

4. a. 7
   b. 4
   c. 1
   d. 3
   e. 8
   f. 2
   g. 6
   h. 5

5. a, c, d, e, f, g, i, k

6. b. Since these images are too small to read with the naked eye, microfiche readers are used to magnify the images and project them onto a viewing screen

   d. When a customer gives you the necessary information to look up a part, you simply locate the corresponding card and place it in the reader

7. Evaluated to the satisfaction of the instructor

8. Evaluated to the satisfaction of the instructor

9. Evaluated to the satisfaction of the instructor

10. Evaluated to the satisfaction of the instructor

11. Evaluated to the satisfaction of the instructor

12. Evaluated to the satisfaction of the instructor

13. Performance skills evaluated to the satisfaction of the instructor

APPLIED MATH FOR PARTS SPECIALISTS
UNIT IX

UNIT OBJECTIVE

After completion of this unit the student should be able to add, subtract, multiply, and divide simple fractions and decimal equivalents, and convert fractions, percentages, and decimals. The student should also be able to solve word problems and use the Decimal Equivalent Chart and the English-Metric Conversion Chart. This knowledge will be evidenced by correctly performing the procedures outlined in the assignment sheets and by scoring 85 percent on the unit test.

SPECIFIC OBJECTIVES

After completion of this unit, the student should be able to:

1. Match terms related to applied math for parts specialists with their correct definitions and give an example for each.
2. List three advantages of a decimal equivalent chart.
3. List two uses for fractions.
4. List two uses for decimal equivalents.
5. List two methods of expressing fractions and decimal equivalents and give an example of each.
6. Discuss two terms related to percent.
7. Demonstrate the ability to:
    a. Add, subtract, multiply, and divide fractions.
    b. Add, subtract, multiply, and divide decimal equivalents.
    c. Convert fractions to decimal form.
    d. Write fractions as decimals and percents.
    e. Write percents as fractions and decimals.
    f. Write decimals as fractions and percents.
    g. Compute discounts and sales prices.
    h. Use the Decimal Equivalent Chart.
    i. Use the English-Metric Conversion Chart.

APPLIED MATH FOR PARTS SPECIALISTS
UNIT IX

SUGGESTED ACTIVITIES

I. Provide student with objective sheet.

II. Provide student with information and assignment sheets.

III. Make transparency.

IV. Discuss unit and specific objectives.

V. Discuss information and assignment sheets.

VI. Evaluate assignment sheets.

VII. Instructor should assign effective learning problems for students having problems with the objectives.

VIII. Give test.

INSTRUCTIONAL MATERIALS

I. Included in this unit:

- A. Objective sheet
- B. Information sheet
- C. Transparency Master 1--Fractional and Decimal Equivalents
- D. Assignment sheets
  1. Assignment Sheet #1--Add, Subtract, Multiply, and Divide Fractions
  2. Assignment Sheet #2--Add, Subtract, Multiply, and Divide Decimal Equivalents
  3. Assignment Sheet #3--Convert Fractions to Decimal Form
  4. Assignment Sheet #4--Write Fractions as Decimals and Percents
  5. Assignment Sheet #5--Write Percents as Fractions and Decimals
  6. Assignment Sheet #6--Write Decimals as Fractions and Percents
  7. Assignment Sheet #7--Compute Discounts and Sales Prices
  8. Assignment Sheet #8--Use the Decimal Equivalent Chart
  9. Assignment Sheet #9--Use the Engligh-Metric Conversion Chart

E. Answers to assignment sheets

F. Test

G. Answers to test

II. References:

A. Bernstein, Allen L. and David W. Wells. *Trouble-Shooting Mathematics Skills*. New York: Holt, Rinehart and Winston Inc., 1969.

B. Lennes, N.J. and L.R. Travers. *Lennes Essentials of Arithmetric*. Dallas, TX: Laidlaw Brother, 1964.

C. Schumacher, Herman G. *Vocational Mathematics* (Shop Arithmetic), Vol. 1. Chicago, IL: Goodheart-Willcox, Inc., 1970.

D. Slade, Margolis, and Boyce. *Mathematics for Technical and Vocational Schools*, 5th Edition. New York: John Wiley and Sons, 1968.

APPLIED MATH FOR PARTS SPECIALISTS
UNIT IX

INFORMATION SHEET

I. Terms and definitions

A. Whole number--Any number or numbers used to indicate an entire unit, quantity, or amount

Example: 1, 3, 10, 25

B. Fraction--Two numbers consisting of a numerator and denominator separated by a fraction line to indicate a part of one unit

Example: 1/8, 1/4, 1/2, 1/16, 1/32, 1/64

C. Mixed number--Any whole number plus a fractional part of one additional unit

Example: 1 1/8, 3 1/4, 5 1/2, 6 3/4

D. Numerator--The top number of a fraction

Example: The numerator of 1/3 is 1

E. Denominator--The base or lower number of a fraction

Example: The denominator of 3/4 is 4

F. Proper fraction--A fraction whose numerator is less than the denominator, indicating a value of less than one unit

Example: 5/16, 3/8, 7/8, 9/16

G. Improper fraction--A fraction whose numerator is equal to or greater than the denominator, indicating a value greater than one unit

Example: 9/8, 18/16, 3/2, 7/4

H. Lowest terms--The lowest base number (numerator and denominator) by which a fraction may be reduced for simplification in unit measurement

Example: 12/16 = 6/8 = 3/4 which is the lowest term

I. Common denominator--Two fractions with the same denominator in each fraction (proper and improper) which allows for simplification in combining or dividing fractions

Example: 1/8 + 1/16 + 1/32 + 1/64 = 8/64 + 4/64 + 2/64 + 1/64 = 15/64

INFORMATION SHEET

II. Advantages of a decimal equivalent chart (Assignment Sheet #8)

- A. Convenience of converting units
  - 1. Fractions to decimals
  - 2. Decimals to fractions
- B. Saves time
- C. Establishes standard for unit conversion
- D. Lists sizes from smallest to largest
- E. Easy to read

III. Uses for fractions

- A. Combines parts of a unit or units into a total amount
- B. Allows a system for adding, subtracting, multiplying, or dividing parts of a unit

IV. Uses for decimals

- A. Allows for a greater method of accuracy than fractional form
- B. Provides a conversion system for use on production equipment
  - 1. Business
  - 2. Mathematics
  - 3. Science

  (NOTE: These are only a few.)

V. Methods of expressing fractions and decimal equivalents (Transparency 1)

- A. Word--May be a written or verbal form of expression; i.e., twenty-one sixty-fourths equal three-hundred twenty-eight thousandths and one ten thousandths
- B. Number--A system using numerators, denominators, whole numbers, mixed numbers, etc., to signify an expression; i.e., 21/64 = 0.3281

VI. Percent

- A. Percent--Hundredths

  Example: 20 items out of 100 would be 20/100 or 20%
- B. One hundred percent (100%)--All of the item or items being discussed

Fractional and Decimal Equivalents

unit tenths hundredths thousandths ten thousandths

0.0000

FRACTION		DECIMAL		WORD
1/4	=	0.250	=	Two hundred fifty thousandths.
1/2	=	0.500	=	Five hundred thousandths.
7/8	=	0.875	=	Eight hundred seventy-five thousandths.
7/16	=	0.4375	=	Four hundred thirty-seven thousandths and five ten-thousandths.

APPLIED MATH FOR PARTS SPECIALISTS
UNIT IX

ASSIGNMENT SHEET #1--ADD, SUBTRACT, MULTIPLY, AND DIVIDE FRACTIONS

Directions: Add, subtract, multiply, and divide fractions using the following procedures:

I. Procedure

A. To add fractions:

1. Change all fractions to a common denominator
2. Change all mixed numbers to improper fractions
3. Add all the numerators
4. Write down the total fraction
5. Reduce fraction to lowest terms in final form
6. If fraction totals to an improper fraction, simplify and reduce to lowest terms

Example #1:

Add:

1/8 + 1/16 + 3/4 + 1/16 = 2/16 + 1/16 + 12/16 + 1/16
change to largest common denominator

2/16 + 1/16 + 12/16 + 1/16 = 16/16 = 1
Add numerators, place over common denominator, and reduce to lowest terms

Example #2:

Add:

3/8 + 1/2 + 5/8 + 3/4 = 3/8 + 4/8 + 5/8 + 6/8
change to largest common denominator

3/8 + 4/8 + 5/8 + 6/8 = 18/8 = 2 2/8 = 2 1/4
Add numerators, place over common denominator, change from improper fraction to proper fraction, reduce to lowest terms

B. To subtract fractions:

1. Change all fractions to a common denominator
2. Change all mixed numbers to improper fractions
3. Subtract the numerators
4. Write down the remaining fraction

ASSIGNMENT SHEET #1

5. Reduce fraction to lowest terms in final form

6. If fraction totals to an improper fraction, simplify and reduce to lowest terms

   Example #3:

   Subtract:

   7/8 - 9/16 = 14/16 - 9/16 = 5/16
   Change to largest common denominator, subtract numerators, complete answer

   (NOTE: The fraction 5/16 does not require any further reduction of terms.)

   Example #4:

   Subtract:

   1 3/16 - 1/4 = 19/16 - 4/16 = 15/16
   Change mixed number to improper fraction; change fractions to largest common denominator; subtract numerators; complete answer

   (NOTE: The fraction 15/16 does not require any further reduction of terms.)

   Example #5:

   Subtract:

   2 3/8 - 1 5/32 = 19/8 - 37/32 = 76/32 - 37/32 = 39/32 = 1 7/32
   Change mixed numbers to improper fraction; change fractions to largest common denominator; subtract numerators; change improper fraction to proper fraction; complete answer

   (NOTE: Fraction does not have to be reduced to lowest terms.)

C. To multiply fractions:

   1. Multiply numerators

   2. Multiply denominators

   3. Write down new numerator over new denominator

   4. Reduce fraction to lowest terms

ASSIGNMENT SHEET #1

5. If using mixed numbers, change fraction to improper fraction, multiply numerator and denominator, change to a mixed number, reduce fraction remainder to lowest terms

   Example #6:

   Multiply: $\frac{5}{8} \times \frac{1}{2} = \frac{5 \times 1}{8 \times 2} = \frac{5}{16}$

   Multiply numerator, multiply denominator, complete answer

   Example #7:

   $\frac{3}{4} \times 6 = \frac{3}{4} \times \frac{6}{1} = \frac{3 \times 6}{4 \times 1} = \frac{18}{4} = 4\frac{2}{4} = 4\frac{1}{2}$

   Multiply numerator by the whole number; multiply denominator by one; reduce to proper fraction; reduce to lowest terms; complete answer

   Example #8:

   $23\frac{7}{16} \times 4 = (23 \times 4) + (\frac{7}{16} \times 4) = (92) + (\frac{7 \times 4}{16 \times 1})$

   $= (92) + (\frac{28}{16}) = (92) + (1\frac{12}{16}) = (92) + (1\frac{3}{4}) = 93\ 3/4$

   Multiply whole number of mixed number by whole number; multiply fractional part of mixed number numerator and denominator by whole number; reduce fractional part of mixed number to proper fraction and lowest terms; add whole numbers of each part; complete answer

   Example #9

   $1\frac{3}{4} \times 4\frac{3}{8} = \frac{7}{4} \times \frac{35}{8} = \frac{245}{32} = 7\frac{21}{32}$

   Change mixed numbers to improper fractions; multiply numerators and denominators; change improper fraction to proper fraction; complete answer

D. To divide fraction:

   1. Express fraction in division form

   2. Invert numerator and denominator of dividing fraction

   3. Multiply numerators and denominators

   4. Reduce fractions to lowest terms

ASSIGNMENT SHEET #1

5. If answer is an improper fraction, change to proper fraction, and reduce to lowest terms

Example #10:

$$\frac{7}{8} \div \frac{1}{2} = \frac{\frac{7}{8}}{\frac{1}{2}} = \frac{7}{8} \times \frac{2}{1} = \frac{14}{8} = 1\frac{6}{8} = 1\frac{3}{4}$$

Write fraction in division form; invert division fraction; multiply numerators and denominators; change fraction from improper to proper fraction; reduce to lowest terms; complete answer

Example #11:

$$2\frac{1}{4} \div 1\frac{1}{8} \text{ or } \frac{2\frac{1}{4}}{1\frac{1}{8}} = \frac{\frac{9}{4}}{\frac{9}{8}} = \frac{9}{4} \times \frac{8}{9} = \frac{72}{36} = 2$$

Write fraction in either form; change to improper numbers for numerator and denominator; multiply numerators and denominators; change improper fraction to proper fraction; complete answer

II. Assignment (show all work)

A. Add the following:

1. 1/2 + 3/4 = ____________________

2. 3/4 + 5/8 + 9/16 + 5/32 = ____________________

3. 2 1/2 + 3 3/4 + 5 5/8 + 3/8 = ________________________

B. Subtract the following:

4. 7/8 - 3/4 = ____________________

5. 1 9/16 - 5/32 = ____________________

6. 3 3/8 - 1 9/16 = ____________________

ASSIGNMENT SHEET #1

C. Multiply the following:

7. 5/8 x 3/4 = ________________

8. 5 5/16 x 4 = ________________

D. Divide the following:

9. 3/4 ÷ 3/8 = ________________

10. 2 1/2 ÷ 5 = ________________

APPLIED MATH FOR PARTS SPECIALISTS
UNIT IX

ASSIGNMENT SHEET #2--ADD, SUBTRACT, MULTIPLY, AND DIVIDE DECIMAL EQUIVALENTS

Directions: Add, subtract, multiply, and divide decimal equivalents using the following procedures:

I. Procedure

A. To work decimal equivalents:

1. Write first decimal number
2. Write second decimal number under first decimal number

   (NOTE: Decimal points must be in line.)

3. If there are more than two decimal numbers, continue to list each in column order keeping the decimal points in line
4. Complete answer
5. Place decimal point in proper position for final answer

B. To add decimals:

Example #1:

$$\begin{array}{r} 0.9375 \\ +\,0.5250 \\ \hline 1.4625 \end{array}$$

C. To subtract decimals:

Example #2:

$$\begin{array}{r} 0.3857 \\ -\,0.0125 \\ \hline 0.3732 \end{array}$$

D. To multiply decimals:

Example #3:

$$\begin{array}{r} 0.2343 \\ \times\,5 \\ \hline 1.1715 \end{array}$$

(NOTE: Count over four decimals on completed answer for correct decimal positioning.)

ASSIGNMENT SHEET #2

E. To divide decimals:

Example #4: 2.3865÷3 =

$$\begin{array}{r}0.7955 \\ 3\,\overline{)2.3865} \\ \underline{21} \\ 28 \\ \underline{27} \\ 16 \\ \underline{15} \\ 15 \\ \underline{15}\end{array}$$

(NOTE: Indicate whole unit as zero or whole number before the decimal.)

II. Assignment

A. Add the following decimal equivalents:

1. 2.125 + 6.375 + 4.0625 + 9.0008 + 0.12 = ______________

2. 0.046 + 0.00002 + 0.653 + 8.1673 = ______________

3. 0.5000 + 0.015 + 0.171 + 8.7003 + 16.37 = ______________

B. Subtract the following decimal equivalents:

4. 8.763 - 0.041 = ______________

5. 126.373 - 126.219 = ______________

6. 9 - 0.125 = ______________

(NOTE: 9 = 9.000.)

ASSIGNMENT SHEET #2

C. Multiply the following decimal equivalents:

7. 0.9321 x 1.76 = ____________

8. 9.429 x 8.670 = ____________

D. Divide the following decimal equivalents:

9. 0.0672 ÷ 28 = ____________

10. 73.16 ÷ 24 = ____________

APPLIED MATH FOR PARTS SPECIALISTS
UNIT IX

ASSIGNMENT SHEET #3--CONVERT FRACTIONS TO DECIMAL FORM

Directions: Convert fractions to decimal form, change fractions to a common denominator, reduce fraction to lowest terms using the following procedures:

I. Procedure

A. To convert fractions to decimal form:

Example #1:

$$\frac{1}{2} = 2\overset{0.500}{\overline{)1.000}} = 0.500$$
$$\begin{array}{r} 1.000 \end{array}$$

Example #2:

$$\frac{3}{4} = 4\overset{0.750}{\overline{)3.000}} = 0.750$$
$$\begin{array}{r} \underline{28} \\ 20 \\ \underline{20} \\ 0 \end{array}$$

Divide the denominator into the numerator; place the decimal in the correct position; use quotient as the answer

B. To change fractions to a common denominator:

Example #3

$$\frac{1}{2} + \frac{1}{4} + \frac{5}{8} = \frac{1 \times 4}{2 \times 4} + \frac{1 \times 2}{4 \times 2} + \frac{5}{8} = \frac{4}{8} + \frac{2}{8} + \frac{5}{8} = \frac{11}{8} = 1\frac{3}{8}$$

Example #4:

$$\frac{1}{16} + \frac{3}{32} + \frac{5}{64} + \frac{3}{4} = \frac{1 \times 4}{16 \times 4} + \frac{3 \times 2}{32 \times 2} + \frac{5}{64} + \frac{3 \times 16}{4 \times 16} = \frac{4}{64} + \frac{6}{64} + \frac{5}{64} + \frac{48}{64} = \frac{63}{64}$$

Using the largest denominator, place all fractions in the same base by multiplying both numerator and denominator by same base power; add all numerators; complete answer

(NOTE: Above examples did not have to be reduced to lowest terms, but Example #3 had to be changed from an improper to a proper fraction.)

ASSIGNMENT SHEET #3

C. To reduce a fraction to lowest terms:

Example #5:

$$\frac{6}{8} = \begin{matrix} 6 \div 2 = 3 \\ 8 \div 2 = 4 \end{matrix} = \frac{3}{4}$$

Example #6:

$$\frac{24}{32} = \begin{matrix} 24 \div 8 = 3 \\ 32 \div 8 = 4 \end{matrix} = \frac{3}{4}$$

Fraction is in lowest terms when numerator and denominator are divided by the greatest factor common to both.

(NOTE: Fractions may be reduced by powers of 2 or by inspection for the greatest common divisor.)

II. Assignment

A. Convert the following fractions to decimal form. Show all work.

1. 1/2 = ____________
2. 5/8 = ____________
3. 1/4 = ____________
4. 1/8 = ____________
5. 5/16 = __________
6. 9/16 = __________
7. 3/4 = ____________
8. 7/8 = ____________
9. 3/8 = ____________
10. 11/16 = _________

B. Change the following fractions to a common denominator and solve. Show all work

11. 1/8 + 1/4 = ____________
12. 1/16 + 5/32 + 3/8 = ____________
13. 7/8 + 9/16 + 1 1/8 + 5/32 = ____________
14. 15/64 - 1/8 = ____________

ASSIGNMENT SHEET #3

15. 7/64 + 11/16 + 9/64 + 1/8 + 7/16 + 1/4 + 3/32 = ______________

(NOTE: Answers 11-15 must be in proper or mixed number form.)

C. Reduce the following fractions to lowest terms.

16. 12/16 = __________

17. 16/24 = __________

18. 48/64 = __________

19. 25/75 = __________

20. 22/64 = __________

21. 72/128 = _________

22. 63/56 = __________

23. 500/800 = ________

24. 57/48 = __________

25. 150/200 = ________

(NOTE: Change improper fractions to proper form; then reduce to lowest terms.)

APPLIED MATH FOR PARTS SPECIALISTS
UNIT IX

ASSIGNMENT SHEET #4–WRITE FRACTIONS AS DECIMALS AND PERCENTS

Directions: Write fractions as decimals and percents using the following procedures:

I. Procedure

A. Expressing fractions as decimals--divide the numerator by the denominator

Example:

$$\frac{5}{8} \qquad \begin{array}{r} .625 \\ 8\overline{)5.000} \\ \underline{X8} \\ 20 \\ \underline{16} \\ 40 \\ \underline{40} \end{array}$$

B. Expressing fractions as percents

1. Express the fraction in decimal form

2. Move the decimal point two places to the right

3. Place the % symbol after the number

Example:

$$\frac{7}{33} \qquad \begin{array}{r} .2121\text{---} = .2121 = 21.21\% \\ 33\overline{)7.00} \\ \underline{66} \\ 40 \\ \underline{33} \\ 70 \\ \underline{66} \\ 40 \\ \underline{33} \\ 7 \end{array}$$

(NOTE: Percent means that some number is being compared to 100.)

4. Multiply the numerator and denominator by that number which will change the denominator to 100

5. Drop the denominator

6. Add the % symbol

Example:

$$\frac{3}{4} = \frac{3}{4} \times \frac{25}{25} = \frac{75}{100} = 75\%$$

ASSIGNMENT SHEET #4

II. Assignment

A. Express each fraction as a decimal.

1. 1/8 ____________________
2. 1/4 ____________________
3. 1/2 ____________________
4. 3/4 ____________________
5. 5/8 ____________________
6. 7/20 ____________________
7. 7/16 ____________________
8. 1/9 ____________________
9. 4/9 ____________________
10. 4/5 ____________________

B. Express each fraction as a percent.

1. 1/4 ____________________
2. 2/9 ____________________
3. 7/10 ____________________
4. 3/4 ____________________
5. 2/2 ____________________
6. 9/11 ____________________
7. 1/3 ____________________
8. 4/9 ____________________
9. 2/6 ____________________
10. 5/8 ____________________

APPLIED MATH FOR PARTS SPECIALISTS
UNIT IX

ASSIGNMENT SHEET #5--WRITE PERCENTS AS FRACTIONS AND DECIMALS

Directions: Write percents as fractions and decimals using the following procedures:

I. Procedure

  A. Expressing percents as fractions

    1. Drop the percent symbol

    2. Place the number over 100

    (NOTE: Reduce to simplest form.)

    Example:

    $38\% = \frac{38}{100} = \frac{19}{50}$

  B. Expressing percents as decimals

    1. Drop the percent symbol

    2. Move the decimal point two places to the left

    Examples: $75\% = .75$, $33\frac{1}{3}\% = .333$

II. Assignment

  A. Express each percent as a fraction.

    1. 50% ____________________

    2. 25% ____________________

    3. 33 1/3% ____________________

    4. 36% ____________________

    5. 28% ____________________

    6. 14 2/7% ____________________

    7. 21% ____________________

ASSIGNMENT SHEET #5

8. 45% ____________________
9. 66 2/3% ____________________
10. 70% ____________________

B. Express each percent as a decimal.

1. 47% ____________________
2. 15% ____________________
3. 33.3% ____________________
4. 62% ____________________
5. 75% ____________________
6. 3% ____________________
7. 16.8% ____________________
8. 9% ____________________
9. 10% ____________________
10. 50% ____________________

APPLIED MATH FOR PARTS SPECIALISTS
UNIT IX

ASSIGNMENT SHEET #6--WRITE DECIMALS AS FRACTIONS AND PERCENTS

Directions: Write decimals as fractions and percents by using the following procedures:

I. Procedure

A. Expressing decimals as fractions

1. If there is one decimal place, drop the decimal point and place the number over 10

Example: $.4 = \frac{4}{10} = \frac{2}{5}$

2. If there are two decimal places, drop the decimal point and place the number over 100

Example: $.75 = \frac{75}{100} = \frac{2}{3}$

3. If there are three decimal places, drop the decimal point and place the number over 1000

Example: $.375 = \frac{375}{1000} = \frac{3}{8}$

(NOTE: Do not forget to reduce to simplest form.)

B. Expressing decimals as percents

1. Move the decimal point two places to the right

2. Place the percent symbol after the number

Examples: 4 = 400%

.37 = 37%

II. Assignment

A. Express each decimal as a fraction.

1. .5 ____________________

2. .8 ____________________

3. .7 ____________________

4. .25 ____________________

ASSIGNMENT SHEET #6

5. .68 ____________

6. .55 ____________

7. .94 ____________

8. .375 ____________

9. .875 ____________

10. .212 ____________

B. Express each decimal as a percent.

1. .12 ____________

2. .19 ____________

3. .7 ____________

4. .29 ____________

5. .37 ____________

6. .42 ____________

7. .5 ____________

8. .523 ____________

9. .746 ____________

10. 3.75 ____________

APPLIED MATH FOR PARTS SPECIALISTS
UNIT IX

ASSIGNMENT SHEET #7--COMPUTE DISCOUNTS AND SALES PRICES

Directions: Compute discounts and compute sales price using discount and percent with the following procedures:

I. Procedure

A. Find the discount

1. Write the percent over 100
2. Write the amount of discount over the original price
3. Write the two fractions with an equal sign between them
4. Cross multiply and solve the resulting equation

Example: A coat which sells for $50 is on sale at a discount of 10%. How much is being taken off the price?

$10/100 = n/50$
$100n = 500$
$n = \$5$

B. Find the sale price

1. Using the discount
    a. Figure the amount of discount
    b. Subtract the discount from the original price

    Example: In the example for A above, the discount is $5 and the original price is $50.
    $50 - $5 = $45 sale price

2. Using the percent
    a. Subtract the percent of discount from 100%
    b. Write this percent over 100
    c. Write the sale price over the original price
    d. Write the two fractions with an equal sign between them

ASSIGNMENT SHEET #7

e. Cross multiply and solve the resulting equations

Example: A coat which sells for $50 is on sale at a discount of 10%. What will you have to pay for it?

Solution:
100% $\quad$ 90/100 = n/50
$\underline{\ 10\%}$ $\quad$ 100 n = 4500
90% $\quad$ n = $45

II. Assignment--Compute following problems. Show all work.

ANSWERS

________ 1. A set of wrenches marked to sell for $159.95 was put on sale at a discount rate of 15%. What is the selling price?

________ 2. What is the selling price of an article marked at $499.95 and selling at a discount of 23%?

________ 3. If an 18% discount is allowed on an article marked at $350.00, what is the selling price? What is the amount of discount?

________ 4. Automobile tires are on sale for 20% off. What will a set of four tires cost that were marked to sell at $45.00 each? What was the discount on each tire?

________ 5. Mr. Matthews decided to decrease the price of an $89.50 lawn mower by 20%. What was the sale price?

________ 6. At a sale a sign read "20% off on all dresses." How much did Joan save on a dress which sells for $35?

________ 7. A toaster priced at $18.95 was sold for $13.95. What was the discount? What was the percent of discount (to the nearest percent)?

________ 8. A coffeemaker priced at $30 is reduced $10 in price. What is the percent of discount?

ASSIGNMENT SHEET #7

_______________ 9. An 8-track player originally sold for $60. Jim bought it for 40% off. What did he pay for the player?

_______________ 10. Harold bought a $45 power saw for 15% off. How much did he pay for the saw?

APPLIED MATH FOR PARTS SPECIALISTS
UNIT IX

ASSIGNMENT SHEET #8--USE THE DECIMAL EQUIVALENT CHART

Directions: Write decimal equivalents as fractions and fractions as decimal equivalents by using the following procedures:

I. Procedure

A. Observe the order of fraction listings from small to large sizes on the decimal equivalent chart

(NOTE: If using a chart other than the one provided, ask the instructor to explain the chart.)

B. Observe the order of decimal listings from small to large sizes

C. Locate a fractional size and then locate the decimal equivalent directly to the right (usually connected by a bar or line)

D. Using reverse order in item C, locate the decimal equivalent and read the fractional size directly to the left (usually connected by a bar or line)

II. Assignment

A. Locate and list the decimal equivalent for the fractional sizes listed below:

1. 1/16 = ______________
2. 7/8 = ______________
3. 1/4 = ______________
4. 1/2 = ______________
5. 9/16 = ______________

B. Locate and list the fractional size for the decimal equivalents listed below:

6. 0.4375 = ______________
7. 0.3125 = ______________
8. 0.375 = ______________
9. 0.125 = ______________
10. .6875 = ______________

APPLIED MATH FOR PARTS SPECIALISTS
UNIT IX

ASSIGNMENT SHEET #8--DECIMAL EQUIVALENT CHART

$\frac{1}{64}$	.015625
$\frac{1}{32}$	.03125
$\frac{3}{64}$	.046875
$\frac{1}{16}$	.0625
$\frac{5}{64}$	.078125
$\frac{3}{32}$	.09375
$\frac{7}{64}$	.109375
$\frac{1}{8}$	.125
$\frac{9}{64}$	.140625
$\frac{5}{32}$	.15625
$\frac{11}{64}$	.171875
$\frac{3}{16}$	.1875
$\frac{13}{64}$	.203125
$\frac{7}{32}$	.21875
$\frac{15}{64}$	.234375
$\frac{1}{4}$	.250
$\frac{17}{64}$	.265625
$\frac{9}{32}$	.28125
$\frac{19}{64}$	.296875
$\frac{5}{16}$	.3125
$\frac{21}{64}$	.328125
$\frac{11}{32}$	.34375
$\frac{23}{64}$	.359375
$\frac{3}{8}$	.375
$\frac{25}{64}$	.390625
$\frac{13}{32}$	.40625
$\frac{27}{64}$	.421875
$\frac{7}{16}$	.4375
$\frac{29}{64}$	.453125
$\frac{15}{32}$	.46875
$\frac{31}{64}$	.484375
$\frac{1}{2}$	.500
$\frac{33}{64}$	.515625
$\frac{17}{32}$	.53125
$\frac{35}{64}$	.546875
$\frac{9}{16}$	.5625
$\frac{37}{64}$	.578125
$\frac{19}{32}$	.59375
$\frac{39}{64}$	.609375
$\frac{5}{8}$	.625
$\frac{41}{64}$	.640625
$\frac{21}{32}$	.65625
$\frac{43}{64}$	.671875
$\frac{11}{16}$	.6875
$\frac{45}{64}$	.703125
$\frac{23}{32}$	.71875
$\frac{47}{64}$	.734375
$\frac{3}{4}$	.750
$\frac{49}{64}$	.765625
$\frac{25}{32}$	.78125
$\frac{51}{64}$	.796875
$\frac{13}{16}$	.8125
$\frac{53}{64}$	.828125
$\frac{27}{32}$	.84375
$\frac{55}{64}$	.859375
$\frac{7}{8}$	.875
$\frac{57}{64}$	.890625
$\frac{29}{32}$	.90625
$\frac{59}{64}$	.921875
$\frac{15}{16}$	.9375
$\frac{61}{64}$	.953125
$\frac{31}{32}$	.96875
$\frac{63}{64}$	.984375
1	1.000

APPLIED MATH FOR PARTS SPECIALISTS
UNIT IX

ASSIGNMENT SHEET #9--USE THE ENGLISH-METRIC CONVERSION CHART

Directions: Compute problems by using the following procedures:

I. Procedure

   A. Observe the three columns provided on the English-Metric conversion chart.

   B. Observe the left column titled "When You Know."

   C. Observe the middle titled "You Can Convert To."

   D. Observe the right column titled "When You Muliply By."

   E. Use the chart to solve problems of conversion.

II. Assignment--Locate the conversion factor and compute the following problems. Show all work.

   1. An order is placed for 100 litres of anti-freeze. How many gallons equal 100 liters?

   2. A shop calls the parts counter and orders a head gasket for a foreign car and during the conversation the mechanic says that the specifications call for 115 newton-meters of torque, but his torque wrench reads in pound-foot of torque. How many pound-foot should the head be torqued to?

   3. The parts counter is 15 feet long. How many meters long is the parts counter?

APPLIED MATH FOR PARTS SPECIALISTS
UNIT IX

ASSIGNMENT SHEET #9
ENGLISH-METRIC CONVERSION CHART

	When You Know	You Can Convert To	When You Multiply By
LENGTH	Inches	Millimeters (mm)	25.4
	Millimeters	Inches	0.04
	Inches	Centimeters (cm)	2.54
	Centimeters	Inches	0.4
	Inches	Meters (m)	0.0254
	Meters	Inches	39.37
	Feet	Centimeters	30.5
	Centimeters	Feet	4.8
	Feet	Meters	0.305
	Meters	Feet	3.28
	Miles	Kilometers (km)	1.61
	Kilometer	Miles	0.62
AREA	Inches^2	Millimeters^2 (mm^2)	645.2
	Millimeters^2	Inches^2	0.0016
	Inches^2	Centimeters^2 (cm^2)	6.45
	Centimeters^2	Inches^2	0.16
	Foot^2	Meters^2 (m^2)	0.093
	Meters^2	Foot^2	10.76
CAPACITY-VOLUME	Ounces	Milliliters (ml)	30
	Milliliters	Ounces	0.034
	Pints	Liters (l)	0.47
	Liters	Pints	2.1
	Quarts	Liters	0.95
	Liters	Quarts	1.06
	Gallons	Liters	3.8
	Liters	Gallons	0.26
	Cubic Inches	Liters	0.0164
	Liters	Cubic Inches	61.03
	Cubic Inches	Cubic Centimeters (cc)	16.39
	Cubic Centimeters	Cubic Inches	0.061
WEIGHT (MASS)	Ounces	Grams	28.4
	Grams	Ounces	0.035
	Pounds	Kilograms	0.45
	Kilograms	Pounds	2.2
FORCE	Ounce	Newtons (N)	0.278
	Newtons	Ounces	35.98
	Pound	Newtons	4.448
	Newtons	Pound	0.225
	Newtons	Kilograms (kg)	0.102
	Kilograms	Newtons	9.807

APPLIED MATH FOR PARTS SPECIALISTS
UNIT IX
ASSIGNMENT SHEET #9
ENGLISH-METRIC CONVERSION CHART

	When You Know	You Can Convert To	When You Multipy By
ACCELERATION	Inch/Sec^2	Meter/Sec^2	.0254
	Meter/Sec^2	Inch/Sec^2	39.37
	Foot/Sec^2	Meter/Sec^2 (m/s^2)	0.3048
	Meter/Sec^2	Foot/Sec^2	3.280
TORQUE	Pound-Inch (Inch Pound)	Newton-Meters (N-M)	0.113
	Newton-Meters	Pound-Inch	8.857
	Pound-Foot (Foot-Pound)	Newton-Meters	1.356
	Newton-Meters	Pound-Foot	.737
PRESSURE	Pound/sq. in. (PSI)	Kilopascals (kPa)	6.895
	Kilopascals	Pound/sq. in.	0.145
	Inches of Mercury (Hg)	Kilopascals	3.377
	Kilopascals	Inches of Mercury (Hg)	0.296
FUEL PERFORMANCE	Miles/gal	Kilometers/liters (km/l)	0.425
	Kilometers/liters	Miles/gal	2.352
VELOCITY	Miles/hour	Kilometers/hr (km/h)	1.609
	Kilometers/hour	Miles/hour	0.621
TEMPERATURE	Degrees Fahrenheit	Degrees Celsius	5/9 (F°-32)
	Degrees Celsius	Degrees Fahrenheight	9/5 (C°+32)=F

APPLIED MATH FOR PARTS SPECIALISTS
UNIT IX

ANSWERS TO ASSIGNMENT SHEETS

Assignment Sheet #1

1. 1 1/4
2. 2 3/32
3. 12 1/4
4. 1/8
5. 1 13/32
6. 1 13/16
7. 15/32
8. 21 1/4
9. 2
10. 1/2

Assignment Sheet #2

1. 21.6833
2. 8.86632
3. 25.7563
4. 8.722
5. 0.154
6. 8.875
7. 1.640496 or 1.6405
8. 81.749430 or 81.7494
9. .0024
10. 3.04833

Assignment Sheet #3

1. 1 ÷ 2 = 0.500
2. 5 ÷ 8 = 0.625
3. 1 ÷ 4 = 0.250
4. 1 ÷ 8 = 0.125
5. 5 ÷ 16 = 0.3125
6. 9 ÷ 16 = 0.5625
7. 3 ÷ 4 = 0.750
8. 7 ÷ 8 = 0.875
9. 3 ÷ 8 = 0.375
10. 11 ÷ 16 = 0.6875
11. 3/8
12. 19/32
13. 2 23/32
14. 7/64
15. 1 54/64 or 1 27/32
16. 3/4
17. 2/3
18. 3/4
19. 1/3
20. 11/32
21. 9/16
22. 1 1/8
23. 5/8
24. 1 3/16
25. 3/4

Assignment Sheet #4

A.
1. .125
2. .25
3. .50
4. .75
5. .625
6. .35
7. .4375
8. .1111---
9. .444---
10. .80

B.
1. 25%
2. 22 2/9% or 22.22%
3. 70%
4. 75%
5. 100%
6. 81.81% or 81 9/11%
7. 33 1/3% or 33.33%
8. 44.44% or 44 4/9%
9. 33 1/3% or 33.33%
10. 62 1/2% or 62.5%

Assignment Sheet #5

A.
1. 1/2
2. 1/4
3. 1/3
4. 9/25
5. 7/25
6. 1/7
7. 21/100
8. 9/20
9. 2/3
10. 7/10

B.
1. .47
2. .15
3. .333
4. .62
5. .75
6. .03
7. .168
8. .09
9. .10
10. .50

Assignment Sheet #6

A.
1. 1/2
2. 4/5
3. 7/10
4. 1/4
5. 17/25
6. 11/20
7. 47/50
8. 3/8
9. 7/8
10. 53/250

B.
1. 12%
2. 19%
3. 70%
4. 29%
5. 37%
6. 42%
7. 50%
8. 52.3%
9. 74.6%
10. 375%

Assignment Sheet #7

1. $135.96
2. $384.96
3. $287, $63
4. $144, $9
5. $71.60
6. $7
7. $5, 26%
8. 33 1/3%
9. $36
10. $38.25

Assignment Sheet #8

(NOTE: Use any type of decimal equivalent chart.)

1. .0625
2. .875
3. .25
4. .5
5. .5625
6. 7/16
7. 5/16
8. 3/8
9. 1/8
10. 11/16

Assignment Sheet #9

1. 26 gallons
2. 84.755
3. 4.575 meters

APPLIED MATH FOR PARTS SPECIALISTS
UNIT IX

NAME ______________________________

TEST

1. Match the terms on the right with their correct definitions and give an example for each.

_____ a. The top number of a fraction
Example:

_____ b. A fraction whose numerator is equal to or greater than the denominator, indicating a value greater than one unit
Example:

_____ c. Any whole number plus a fractional part of one additional unit
Example:

_____ d. The lowest base number by which a fraction may be reduced for simplification in unit measurement
Example:

_____ e. Two numbers consisting of a numerator and denominator separated by a fraction line to indicate a part of one unit
Example:

_____ f. The base or lower number of a fraction
Example:

_____ g. Any number or numbers used to indicate an entire quantity, unit, or amount
Example:

_____ h. A fraction whose numerator is less than the denominator, indicating a value of less than one unit
Example:

_____ i. Two fractions with the same denominator in each fraction which allows for simplification in adding and dividing fractions
Example:

1. Whole number
2. Mixed number
3. Fraction
4. Numerator
5. Denominator
6. Proper fraction
7. Improper fraction
8. Lowest terms
9. Common denominator

2. List three advantages of a decimal equivalent chart.

a. ______________________________

b. ______________________________

c. ______________________________

3. List two uses for fractions.

a. ____________________

b. ____________________

4. List two uses for decimal equivalents.

a. ____________________

b. ____________________

5. List two methods of expressing fractions and decimal equivalents and give an example of each.

a. ____________________ Example:

b. ____________________ Example:

6. Discuss the following two terms related to percent.

a. Percent ____________________

____

b. One-hundred percent ____________________

____

7. Demonstrate the ability to:

a. Add, subtract, multiply, and divide fractions.

b. Add, subtract, multiply, and divide decimal equivalents.

c. Convert fractions to decimal form.

d. Write fractions as decimals and percents.

e. Writing percents as fractions and decimals.

f. Writing decimals as fractions and percents.

g. Compute discounts and sales prices.

h. Use the decimal equivalent chart.

i. Use the English-Metric Conversion chart.

(NOTE: If these activities have not been accomplished prior to the test, ask your instructor when they should be completed.)

APPLIED MATH FOR PARTS SPECIALISTS
UNIT IX

ANSWERS TO TEST

1. Examples should be graded to the satisfaction of the instructor
    a. 4
    b. 7
    c. 2
    d. 8
    e. 3
    f. 5
    g. 1
    h. 6
    i. 9

2. Any three of the following:
    a. Convenience of converting units
        1) Fractions to decimals
        2) Decimals to fractions

    b. Saves time
    c. Establishes standard for unit conversion
    d. Lists sizes from smallest to largest
    e. Easy to read

3. a. Combines parts of a unit or units into a total amount
    b. Allows a system for adding, subtracting, multiplying, or dividing parts of a unit

4. a. Allows for a greater method of accuracy than fractional form
    b. Provides conversion system for use on production equipment
        1) Business
        2) Mathematics
        3) Science

5. a. Word, i.e., one-fourth
    b. Number, i.e., 1/4

6. Discussion should include:
    a. Hundredths
    b. All of the item or items being discussed

7. Evaluated to satisfaction of the instructor

MEASURING INSTRUMENTS
UNIT X

UNIT OBJECTIVE

After completion of this unit, the student should be able to identify common types of rules, write the use of a rule with accessory, list general procedures for using rules, and list the common units of measure found on rules. The student should also be able to use, identify, care for, and read the common types of outside and inside micrometers. This knowledge will be evidenced by correctly performing the procedures outlined in the assignment and job sheets and by scoring 85 percent on the unit test.

SPECIFIC OBJECTIVES

After completion of this unit, the student should be able to:

1. Match terms related to linear measurement with the correct definitions.
2. Select basic units of measurement found on rules.
3. Identify types of rules used in shop store work.
4. State the purpose of the measurement transfer.
5. Complete a list of procedures for using rules.
6. Arrange in order the steps for reading a rule.
7. Select from a list the types of measurements found on outside micrometers.
8. Identify the major parts of an outside micrometer.
9. List steps in selecting the proper size outside micrometer.
10. Select true statements concerning rules for use and care of micrometers.
11. Define the term *feel* in using a micrometer.
12. Select true statements concerning methods for checking accuracy of outside micrometers.
13. Identify the parts of an inside micrometer.
14. List uses of an inside micrometer.
15. Identify accessories used with an inside micrometer.
16. Select true statements concerning methods for checking the accuracy of an inside micrometer.

17. Read a plain micrometer setting.
18. Read a vernier micrometer setting.
19. Demonstrate the ability to:
    a. Draw lines.
    b. Measure lines.
    c. Apply line measurement.
    d. Apply circular measurement.
    e. Read plain micrometer settings.
    f. Read vernier micrometer settings.
    g. Read inside micrometer settings.
    h. Use a plain micrometer.
    i. Use a vernier micrometer.
    j. Use an inside micrometer.

MEASURING INSTRUMENTS
UNIT X

SUGGESTED ACTIVITIES

I. Provide student with objective sheet.

II. Provide student with information, assignment, and job sheets.

III. Provide student with appropriate rules.

IV. Make transparencies.

V. Discuss unit and specific objectives.

VI. Discuss information and assignment sheets.

VII. Show film (see Additional Materials).

VIII. Prepare and use supplemental materials if available.

IX. Evaluate assignment sheets.

X. Give test.

(NOTE: Tests covering ruler use and micrometer use may be given separately.)

INSTRUCTIONAL MATERIALS

I. Included in this unit:

- A. Objective sheet
- B. Information sheet
- C. Transparency masters
    1. TM 1--Terms of Linear Measurement
    2. TM 2--Units of Measurement
    3. TM 3--Eighths Rule
    4. TM 4--Sixteenths Rule
    5. TM 5--Thirty-seconds Rule
    6. TM 6--Sixty-fourths Rule
    7. TM 7--Types of Rules
    8. TM 8--Uses of Rules

    9. TM 9--Micrometer Parts
    10. TM 10--Selecting the Proper Size Micrometer
    11. TM 11--Checking the Micrometer for Accuracy
    12. TM 12--Parts of the Inside Micrometer
    13. TM 13--Uses of the Inside Micrometer
    14. TM 14--Uses of the Inside Micrometer (Continued)
    15. TM 15--Inside Micrometer Set
    16. TM 16--Methods for Checking Accuracy of Inside Micrometers
    17. TM 17--Reading a Micrometer
    18. TM 18--Sleeve Readings
        Overlay A--Thimble Sleeve Readings
        Overlay B--Vernier Sleeve Readings
    19. TM 19--Vernier Micrometer Readings

D. Assignment sheets
    1. Assignment Sheet #1--Draw Lines
    2. Assignment Sheet #2--Measure Lines
    3. Assignment Sheet #3--Apply Line Measurement
    4. Assignment Sheet #4--Apply Circular Measurement
    5. Assignment Sheet #5--Read Plain Micrometer Settings
    6. Assignment Sheet #6--Read Vernier Micrometer Settings
    7. Assignment Sheet #7--Read Inside Micrometer Settings

E. Answers to assignment sheets

F. Job Sheets
    1. Job Sheet #1--Use a Plain Micrometer
    2. Job Sheet #2--Use a Vernier Micrometer
    3. Job Sheet #3--Use an Inside Micrometer

G. Test

H. Answers to test

II. References:

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B. Ludwig, Oswald, and McCarthy, Willard. *Metalwork Technology and Practice.* Bloomington, IL: McKnight and McKnight Publishing Co., 1969.

C. Walker, John. *Machining Fundamentals.* Homewood, IL: Goodheart-Willcox Co., Inc., 1969.

D. Porter, Harold; Lascoe, O.D.; and Nelson, Clyde. *Machine Shop Operations and Setups.* 3rd ed. Chicago: American Technical Society, 1967.

E. Feirer, John Louis, and Tetro, Earl E. *Machine Tool Metalworking: Principles and Practice.* New York: McGraw-Hill Book Co., Inc., 1961.

F. Johnson, Harold V. *General-Industrial Machine Shop.* rev. Peoria, IL: Charles Bennett Publishing Co., 1970.

G. McCarthy, Willard J., and Smith, Robert E. *Machine Tool Technology.* Bloomington, IL: McKnight and McKnight Publishing Co., 1968.

H. *How to Read, Use, and Care for Micrometers and Vernier Gauges.* Athol, MA: L. S. Starrett Co.

I. *The Tools and Rules for Precision Measuring.* Athol, MA: L. S. Starrett Co.

III. Additional materials:

A. Film--"The Micrometer." OSU Film Library, Oklahoma State University, Stillwater, OK 74074.

B. Filmstrip--"Measurements and Measuring." Series no. 2120. The Jam Handy Organization, Inc.; 2821 East Grand Boulevard; Detroit, MI 48211.

C. Film--"Precision Measuring: Steel Scale - Part 1, The Fractional Scale." BFA Educational Media, 2211 Michigan Avenue, Santa Monica, CA 90404.

D. Filmstrip--"Layout Tools and Measuring Instruments." Film no. 8, Series no. 1998. The Jam Handy Organization, 2821 East Grand Boulevard, Detroit, MI 48211.

(NOTE: The following film is available to instructors from the Curriculum and Instructional Materials Center, State Department of Vocational and Technical Education, 1515 West Sixth Avenue, Stillwater, OK 74074.)

E. Film--"Metric System." Films Incorporated, 1144 Wilmette Avenue, Wilmette, IL 60091.

F. Filmstrip--"Micrometer: How It Works; How To Read It." The Jam Handy Organization, Inc.; 2821 East Grand Boulevard; Detroit, MI 48211.

MEASURING INSTRUMENTS
UNIT X

INFORMATION SHEET

I. Terms and definitions (Transparency 1)

   A. Steel rule--Semiprecision measuring instrument graduated in fractional or decimal parts of an inch

   B. Graduation--Marking found on rules and scales to denote unit of length

   C. Error--Mistake in the reading or total measurement

   D. Reliable measure--Accurate or true measurement

   E. Reference point--Starting point of measurement for both workpiece and rule

II. Units of measure found on rules (Transparencies 2, 3, 4, 5, and 6)

   A. Fractional

      1. Eighths (1/8")
      2. Sixteenths (1/16")
      3. Thirty-seconds (1/32")
      4. Sixty-fourths (1/64")

   B. Decimal

      1. Tenths (0.1)
      2. Hundredths (0.01)

   C. Metric

      1. Meter (1.0m)
      2. Decimeter (0.1m)
      3. Centimeter (0.01m)
      4. Millimeter (0.001m)

III. Rules used in store or shop (Transparency 7)

   A. Steel rule

   B. Narrow flexible rule

   C. Slide caliper rule

INFORMATION SHEET

IV. Purpose of the measurement transfer--Measures lengths taken from dividers and calipers (Transparency 8)

(NOTE: A caliper is an instrument used in measuring diameters.)

V. Procedures for using rules

- A. Use the proper length and graduation
- B. Use finest graduation for accuracy
- C. Use a good quality rule
- D. Do not bend or distort a steel rule
- E. Use only for intended purpose
- F. Use whole unit graduation as reference for accuracy
- G. Use rule on edge for better reading
- H. Use rule along axis parallel to plane of measurement

VI. Steps for reading a rule

- A. Select scale of the required units
- B. Total the number of graduations
- C. Count whole units
- D. Reduce graduations to lowest terms

VII. Types of measurements found on outside micrometers

- A. Plain measurement--To the nearest thousandth of an inch (0.001")
- B. Vernier measurement--To the nearest ten-thousandth of an inch (0.0001")

VIII. Major parts of an outside micrometer (Transparency 9)

- A. Frame
- B. Anvil
- C. Spindle
- D. Lock
- E. Sleeve
- F. Thimble
- G. Ratchet stop

INFORMATION SHEET

IX. Steps in selecting the proper size outside micrometer (Transparency 10)

A. Determine the approximate size of the workpiece

B. Observe the capacity of the outside micrometer on the frame

(NOTE: On variable range micrometers, the capacity of the micrometer is located on each anvil.)

X. Rules for use and care of micrometers

A. Prevent damage to the instrument

(NOTE: Keep instrument away from heat, abrasive dust, moisture, oil, and grease.)

B. Clean and lubricate the instrument occasionally

C. Check the instrument for accuracy before use

(NOTE: Observe for worn or loose parts.)

D. Do not overtighten the instrument during measurement

E. Keep instrument and accessories in proper storage and order

F. Handle the instrument in the correct manner

G. Use instrument only for intended purpose

XI. Definition of *feel* in using a micrometer--A sense of touch developed to such a degree that two people can measure a workpiece and arrive at measurements that are exactly the same

XII. Methods for checking accuracy of outside micrometers (Transparency 11)

A. 0" - 1.000"

1. Close spindle and anvil together
2. Observe zero references on the sleeve and thimble

B. More than one inch

1. Use a standard bar or disc to check the minimum capacity
2. Observe zero references on the sleeve and thimble

XIII. Parts of the inside micrometer (Transparency 12)

A. Body

B. Anvil

C. Thimble

INFORMATION SHEET

D. Handle

E. Rod

F. Lock screw

XIV. Uses of an inside micrometer

A. Measure inside diameter (Transparency 13)

Examples: Drilled holes, bored holes, reamed holes

B. Measure width (Transparency 13)

Examples: Slots, grooves

C. Measure height (Transparency 14)

(NOTE: A base attachment should be used.)

D. Transfer measurement to outside spring-joint caliper (Transparency 14)

XV. Accessories used with an inside micrometer (Transparency 15)

A. Extension rod

(NOTE: The rod extends the measuring capacity of the base unit.)

B. Extension collar

(NOTE: The extension collar locks the extension rod to the base unit and extends the measuring capacity by 0.500".)

C. Extension handle

(NOTE: Hard-to-reach places can be measured more easily when an extension handle is used.)

D. Base unit

(NOTE Base units come in various ranges of measurement.)

E. Height gauge base

(NOTE: The base enables the micrometer to be used for inspection or setup work.)

F. Wrench

(NOTE: The wrench is used to adjust accuracy of micrometer.)

XVI. Methods for checking the accuracy of an inside micrometer (Transparency 16)

A. Measure the zero reference of an inside micrometer with an accurate outside micrometer

INFORMATION SHEET

B. Measure an object of known accurate measurement or use a standard ring gauge

C. Use a gauge block holder and gauge blocks to check an extension bar measurement

XVII. Reading a plain micrometer (Transparencies 17, 18 and Overlay A)

A. Each numbered division on the sleeve represents one hundred thousandths of an inch

B. Each small graduation on the sleeve between the numbered graduations represents twenty-five thousandths of an inch (0.025")

C. Each graduation found on the thimble represents one thousandths of an inch (0.001")

D. Reading is totaled by adding the three values

Example:
0.300--Number on the sleeve
0.050--Small graduations on the sleeve
0.012--Graduations on the thimble
0.362--Plain micrometer reading

XVIII. Reading a vernier micrometer (Transparencies 18, 19 and Overlays A and B)

A. Each numbered graduation on the sleeve represents one hundred thousandths of an inch

B. Each small graduation on the sleeve between the numbered graduations represents twenty-five thousandths of an inch (0.025")

C. Each graduation found on the thimble represents one thousandth of an inch (0.001")

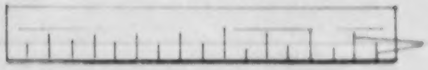
D. Each line graduation found on top of the sleeve represents one ten-thousandth of an inch (0.0001")

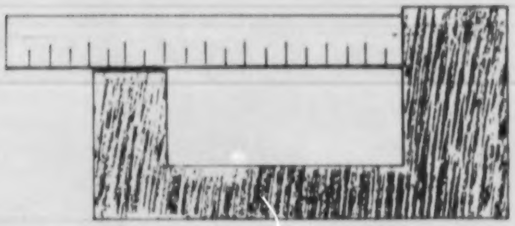
E. Total reading is found by adding the four values

Example:
0.4000--Number on the sleeve
0.0250--Small graduations on the sleeve
0.0190--Graduations on the thimble
0.0006--Vernier scale on top of sleeve
0.4446--Vernier micrometer reading

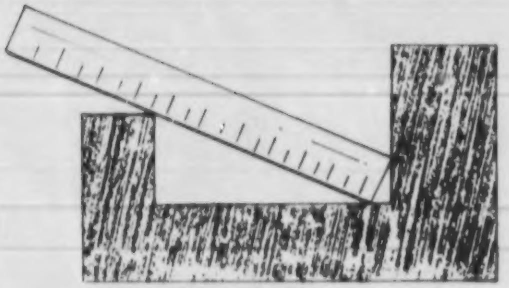
Terms of Linear Measurement

Steel Rule

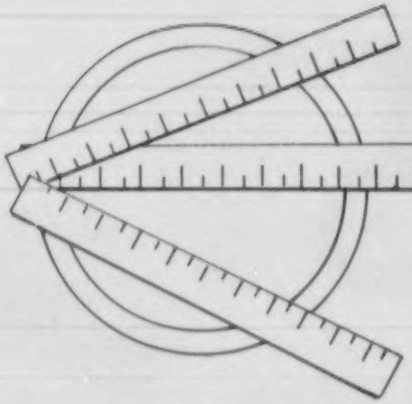

Graduations

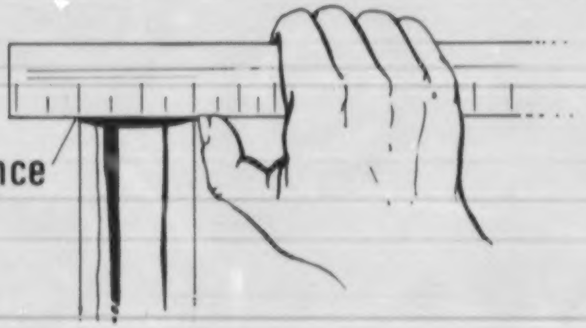


Reliable Measure



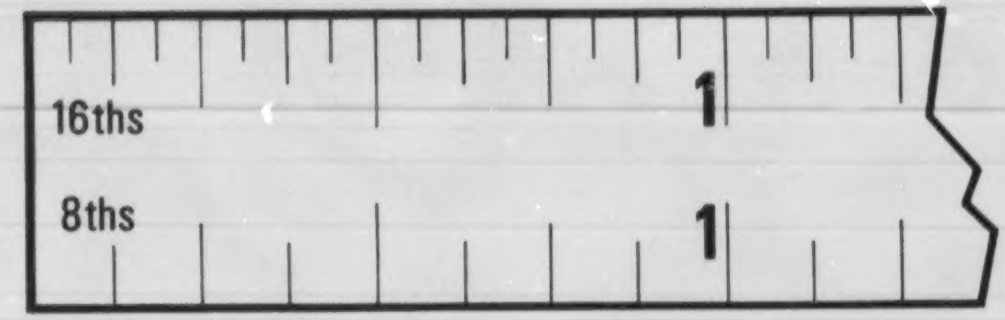
Error


Error
Reliable Measure
Error

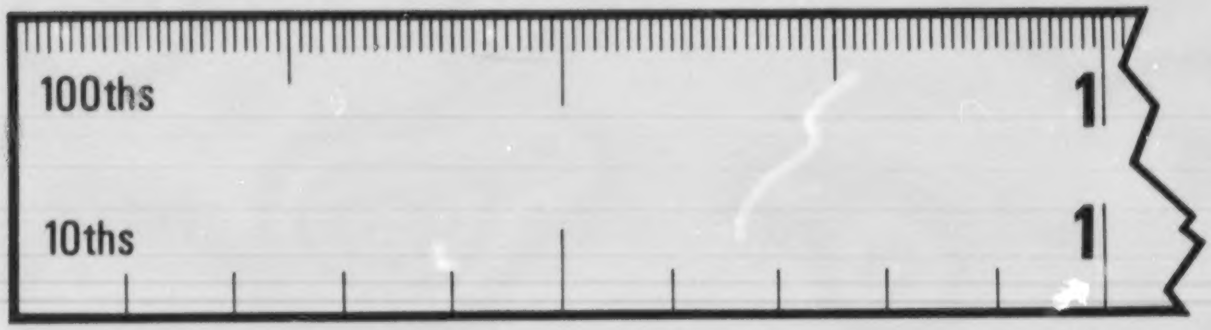

Reference Point

Reliable Measure

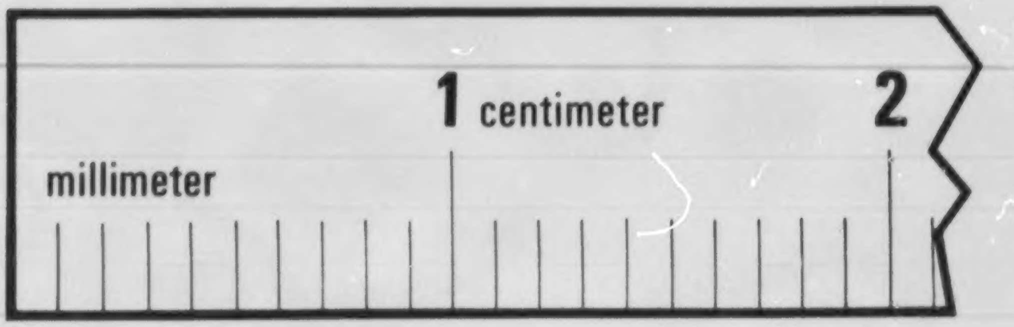
Units of Measurement


16ths
1
8ths
1

Fractional Rule

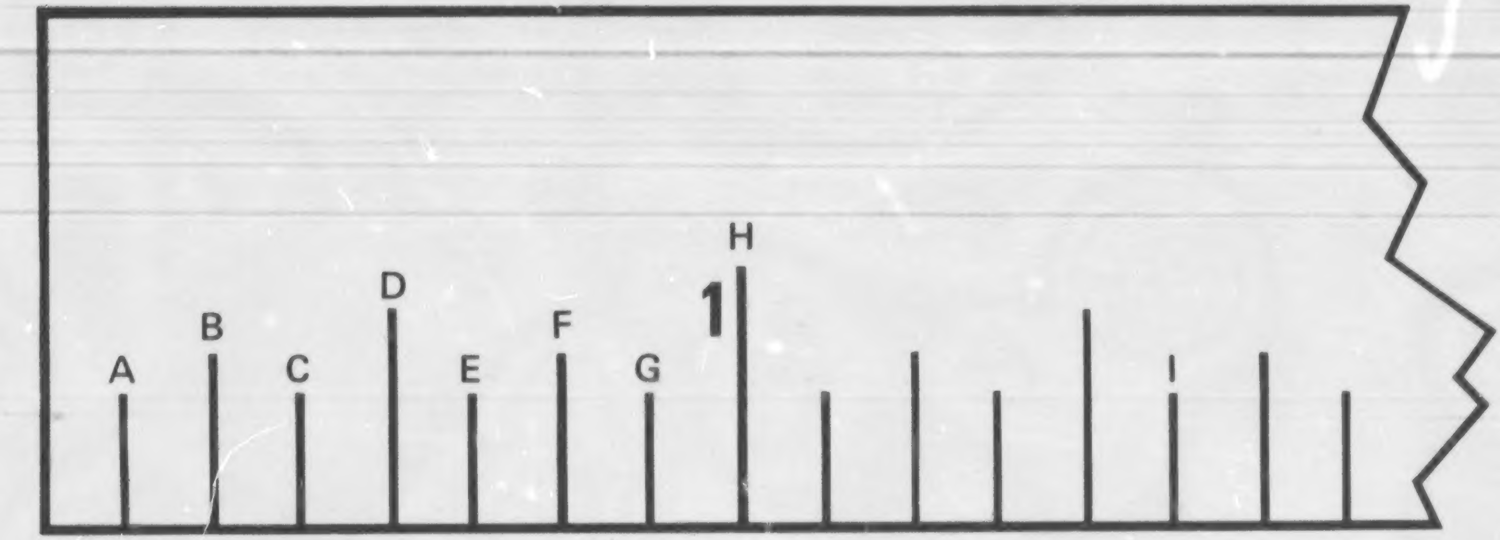

100ths
1
10ths
1

Decimal Rule


1
centimeter
2
millimeter

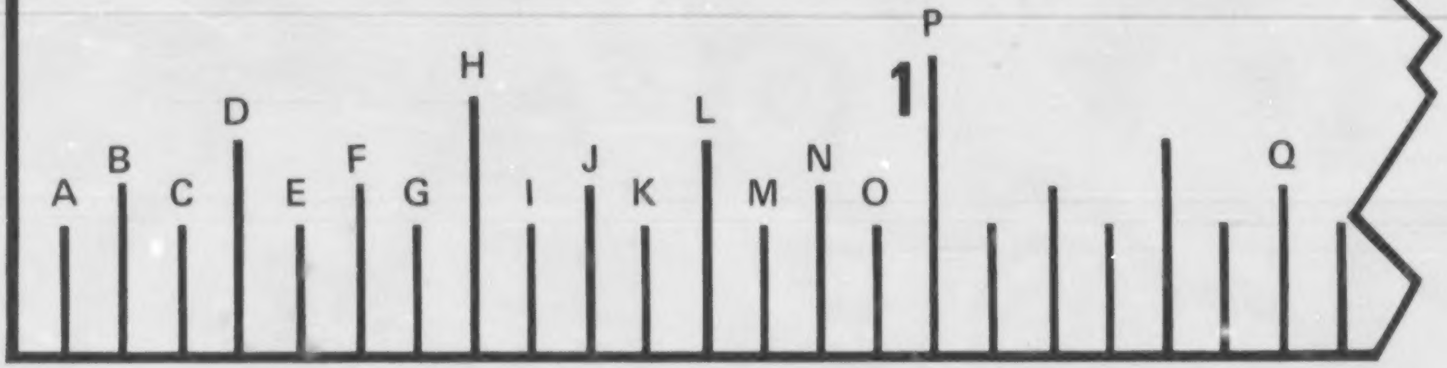
Metric Rule

Eighths Rule


A
B
C
D
E
F
G
1
H
I

A = 1/8, B = 2/8 = 1/4, C = 3/8, D = 4/8 = 1/2,
E = 5/8, F = 6/8 = 3/4, G = 7/8, H = 8/8 = 1,
I = 13/8 = 1 5/8

Sixteenths Rule

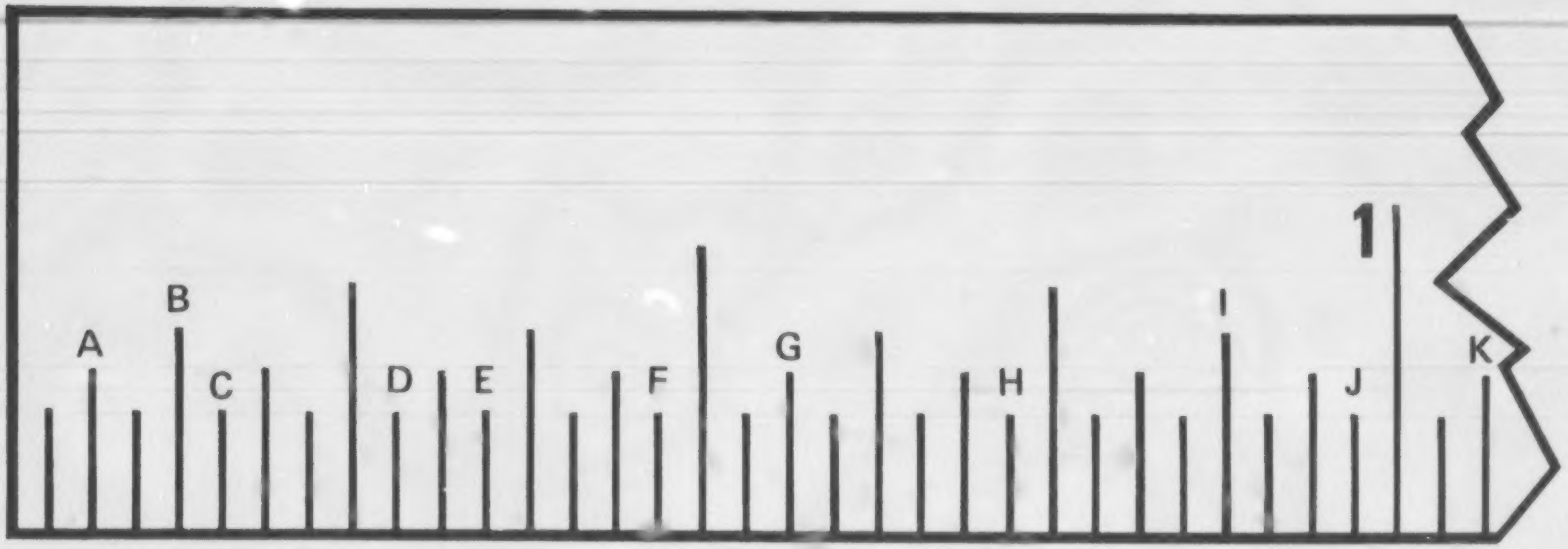

A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
1
Q

A = 1/16, B = 2/16 = 1/8, C = 3/16, D = 4/16 = 1/4,
E = 5/16, F = 6/16 = 3/8, G = 7/16, H = 8/16 = 1/2,
I = 9/16, J = 10/16 = 5/8, K = 11/16, L = 12/16 = 3/4,
M = 13/16, N = 14/16 = 7/8, O = 15/16, P = 16/16 = 1,
Q = 22/16 = 1 6/16 = 1 3/8

TM 4

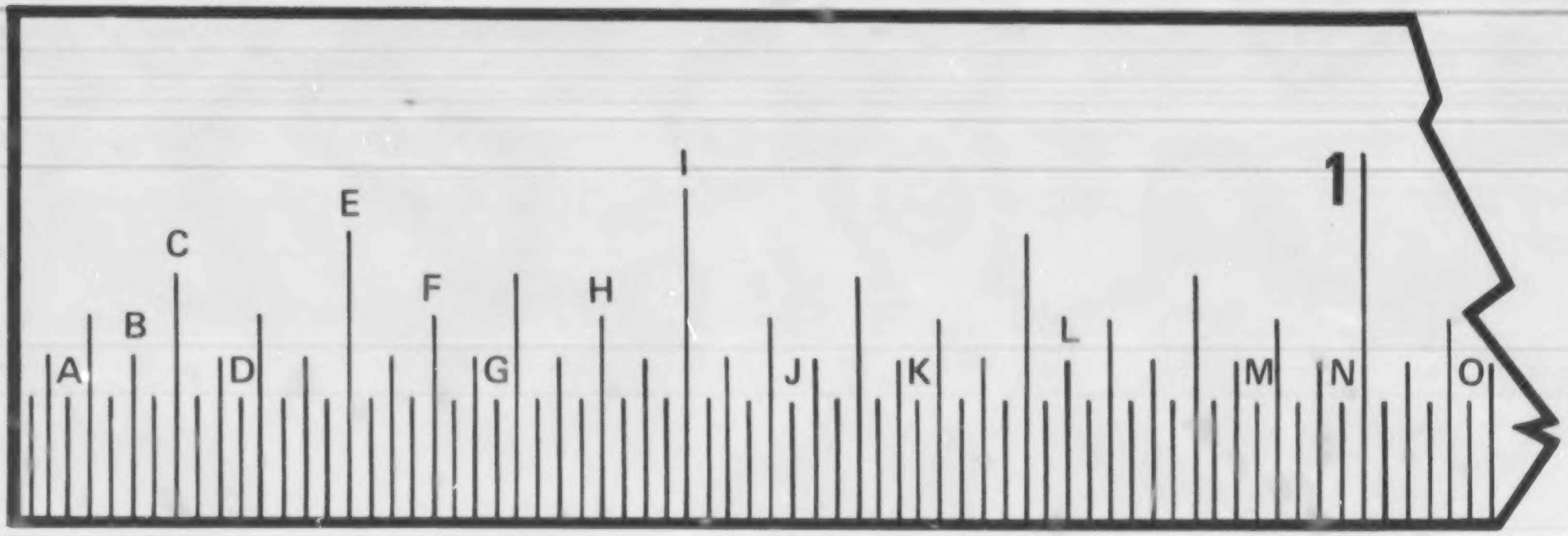
PS-423

Thirty-Seconds Rule


A
B
C
D
E
F
G
H
I
J
K
1

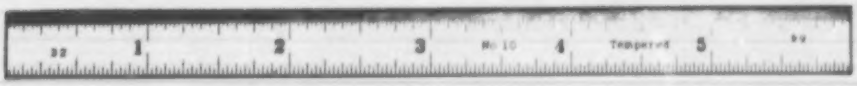
A = 2/32 = 1/16, B = 4/32 = 1/8, C = 5/32, D = 9/32,
E = 11/32, F = 15/32, G = 18/32 = 9/16, H = 23/32,
I = 28/32 = 14/16 = 7/8, J = 31/32,
K = 34/32 = 1 2/32 = 1 1/16

Sixty-Fourths Rule

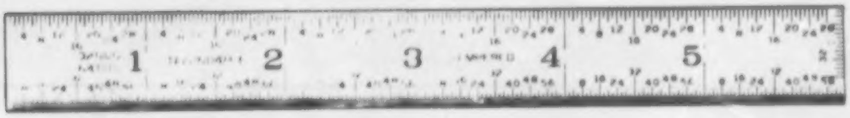

A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
1

A = 3/64, B = 6/64 = 3/32, C = 8/64 = 1/8, D = 11/64,
E = 16/64 = 8/32 = 1/4, F = 20/64 = 10/32 = 5/16,
G = 23/64, H = 28/64 = 14/32 = 7/16, I = 32/64 = 1/2,
J = 37/64, K = 43/64, L = 50/64 = 25/32, M = 59/64,
N = 63/64, O = 69/64 = 1 5/64

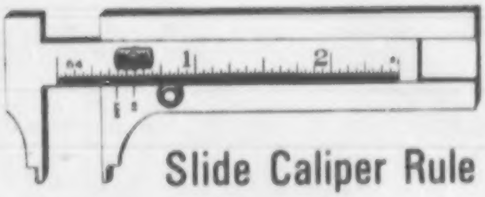
Types of Rules


32
1
2
3
No 10
4
Tempered
5
32

Narrow Flexible Rule



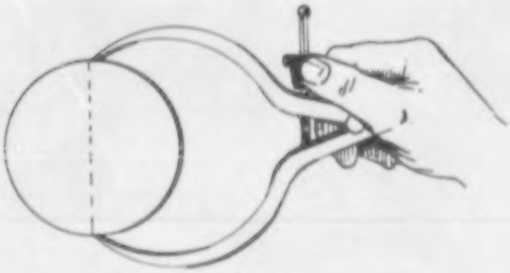
Steel Rule



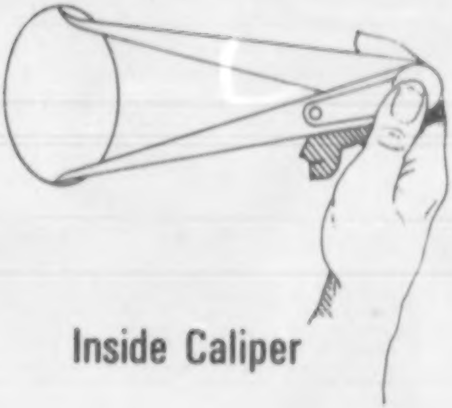
Slide Caliper Rule

Uses of Rules

MEASUREMENT TRANSFER

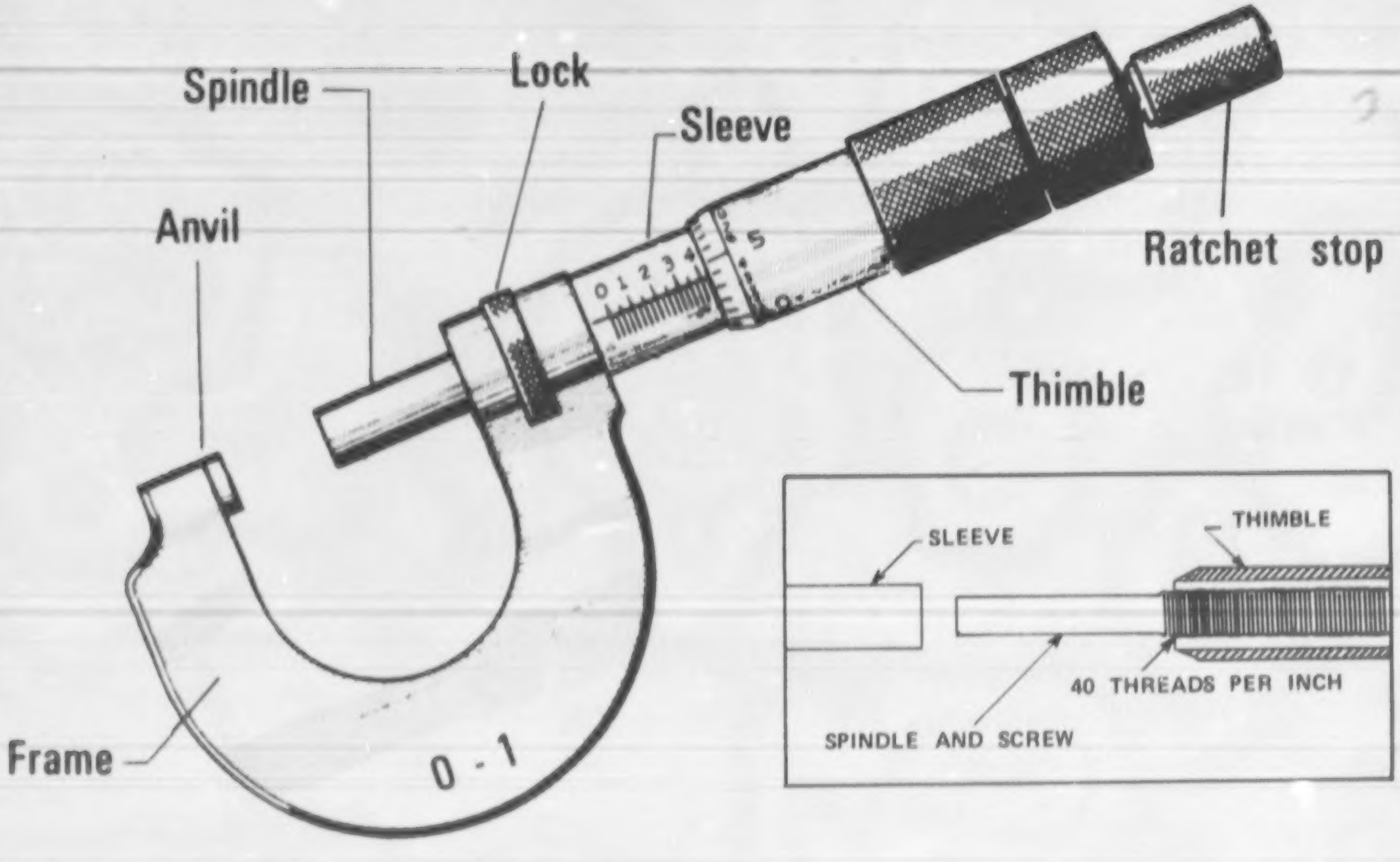


Outside Caliper

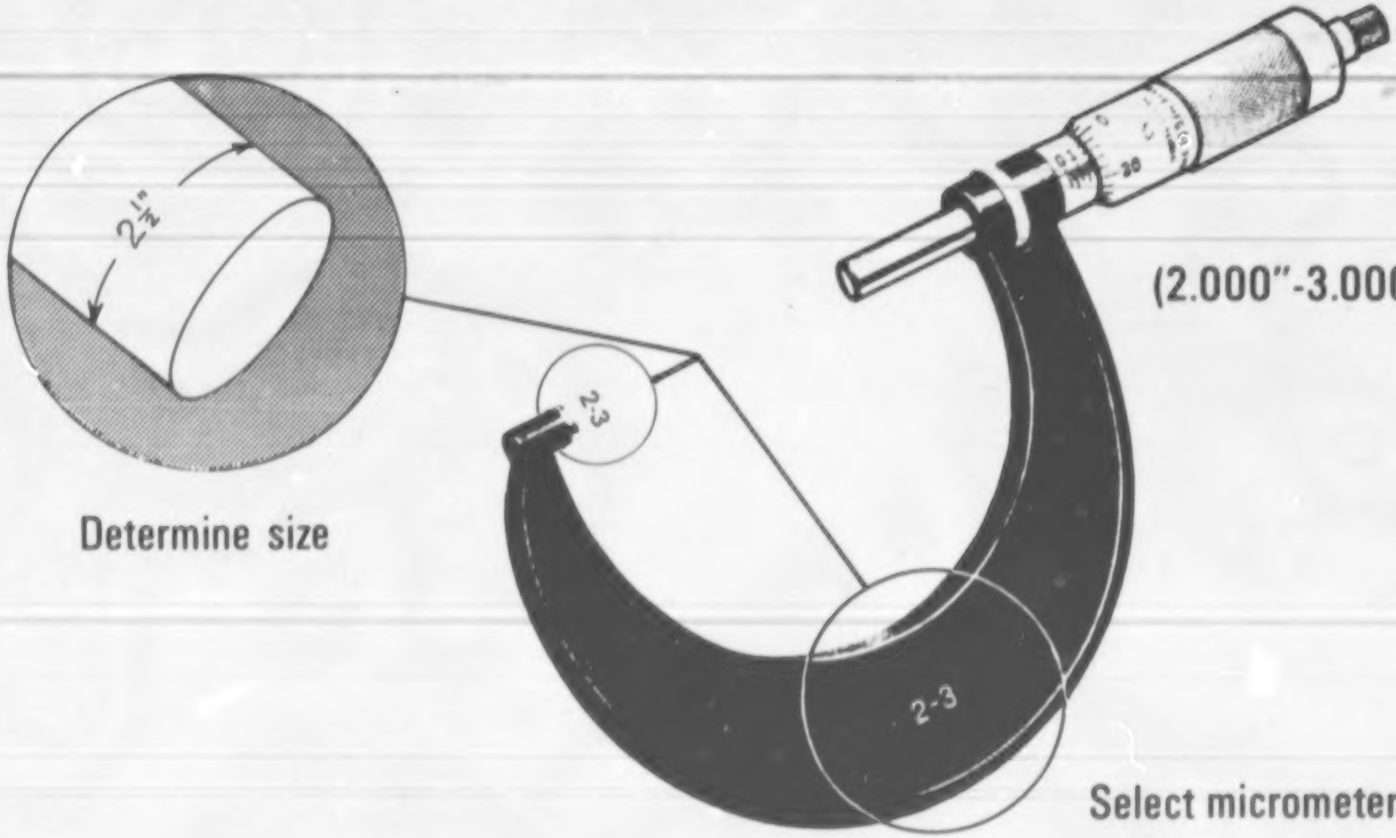


Inside Caliper

Micrometer Parts


Spindle
Lock
Sleeve
Anvil
Ratchet stop
Thimble
Frame
0 - 1
0 1 2 3 4
5
SLEEVE
THIMBLE
40 THREADS PER INCH
SPINDLE AND SCREW

Selecting the Proper Size Micrometer

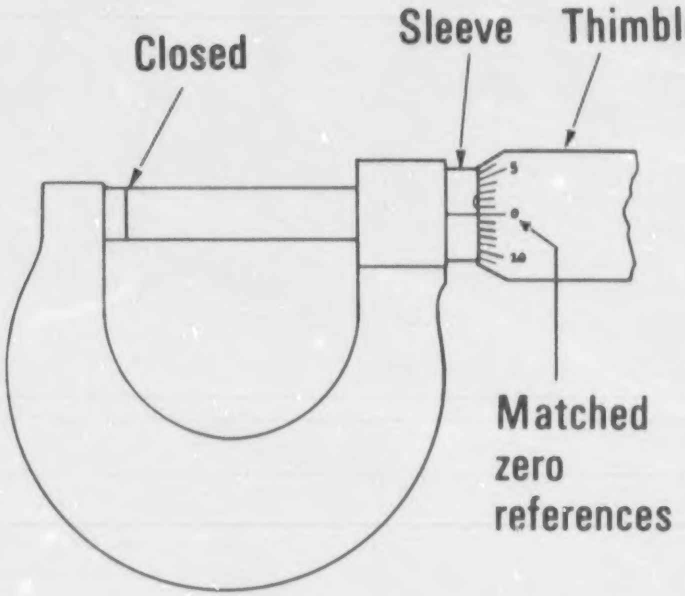


Determine size

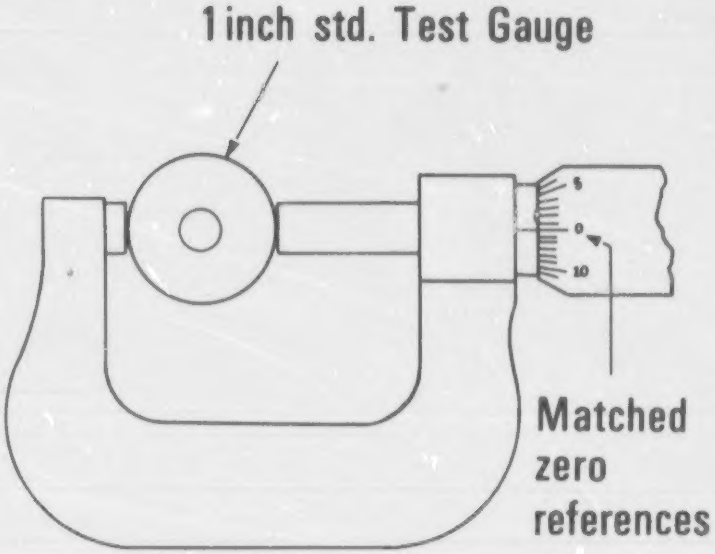
(2.000"-3.000") Size

Select micrometer

Checking the Micrometer for Accuracy

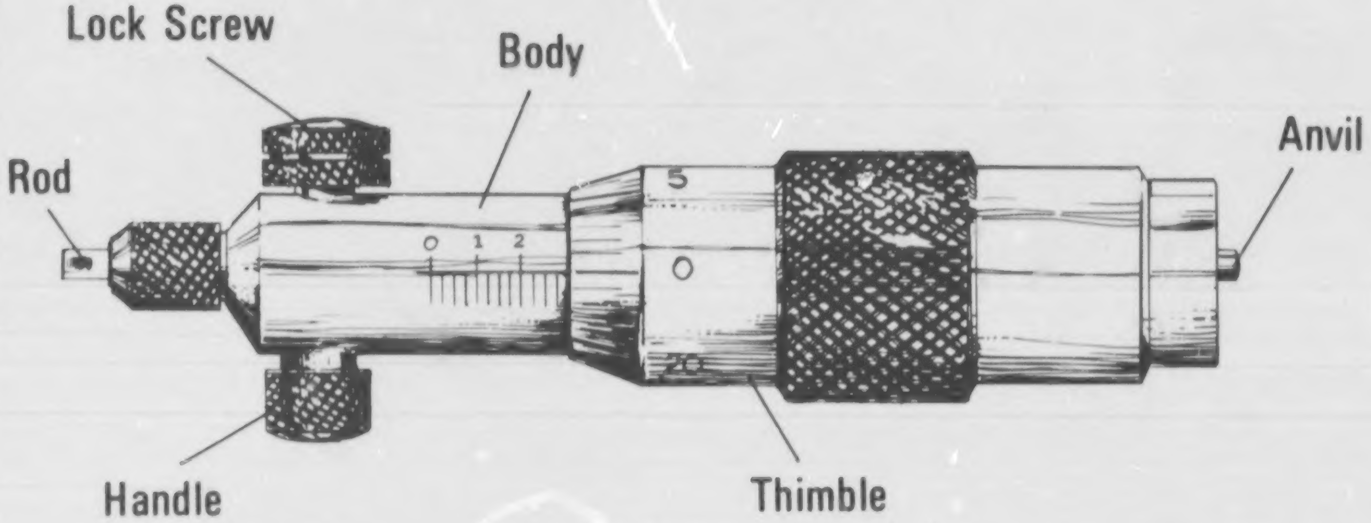

Closed
Sleeve
Thimble
5
0
10
Matched zero references

1 INCH MICROMETER

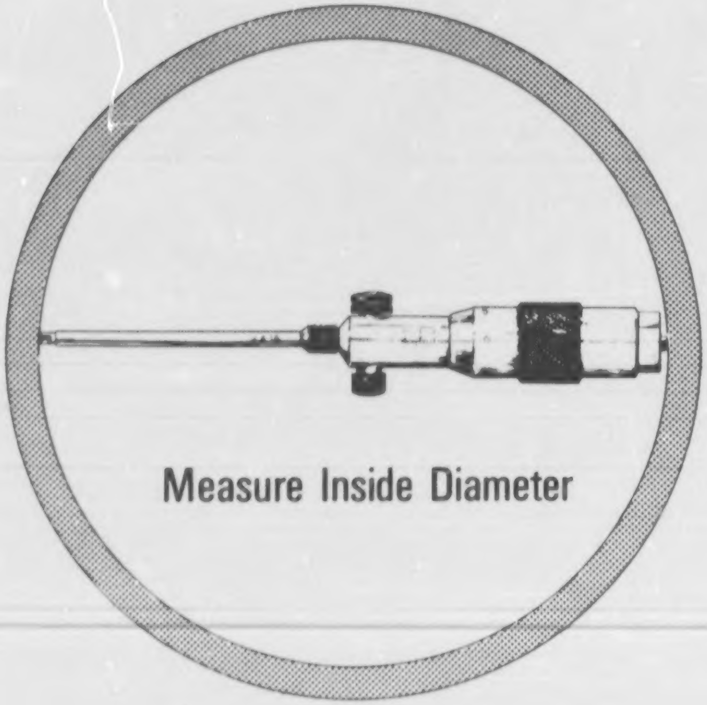

1 inch std. Test Gauge
5
0
10
Matched zero references

2 INCH MICROMETER

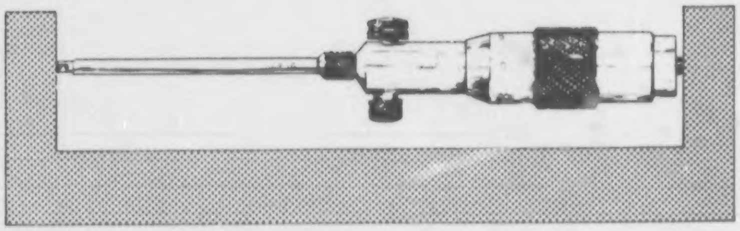
Parts of the Inside Micrometer


Lock Screw
Body
Rod
Anvil
0 1 2
5
0
20
Handle
Thimble

Uses of the Inside Micrometer



Measure Inside Diameter

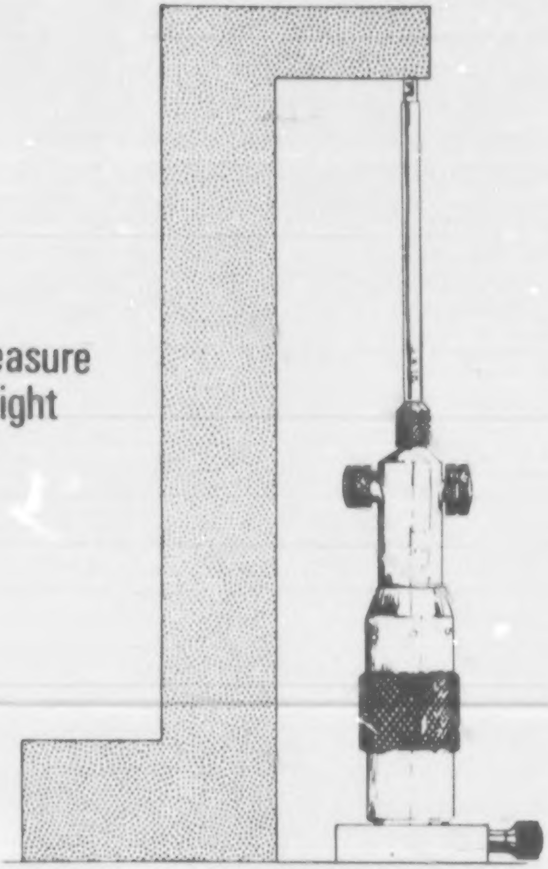


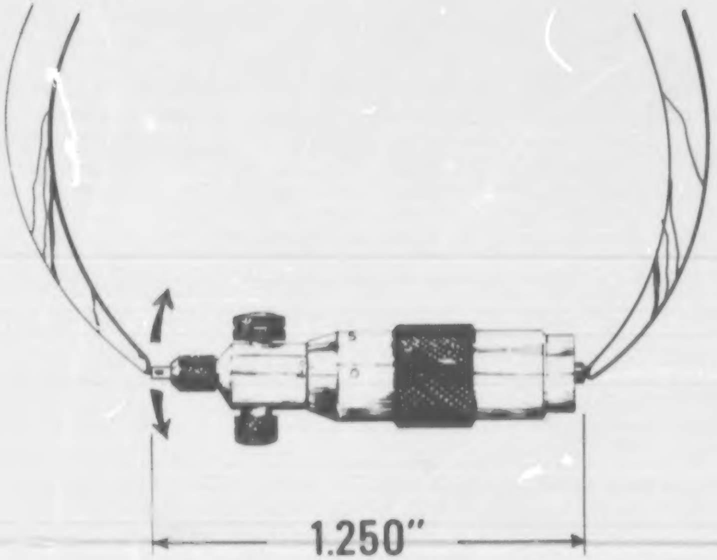
Measure Width

Uses of the Inside Micrometer

(Continued)

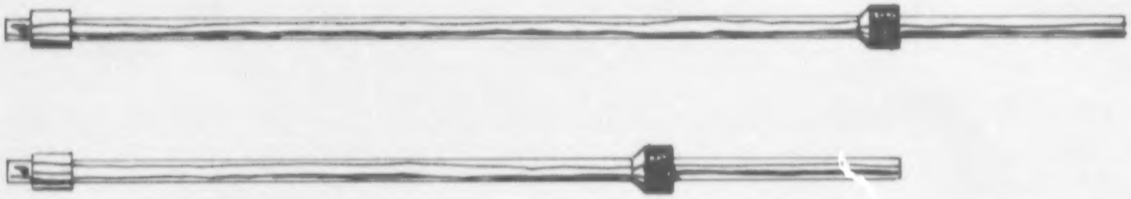
Measure Height

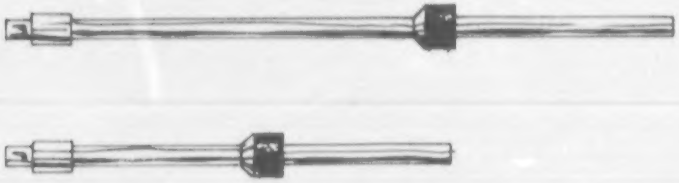




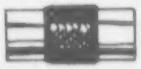
Transfer Measurement to Outside Spring-Joint Caliper

Inside Micrometer Set

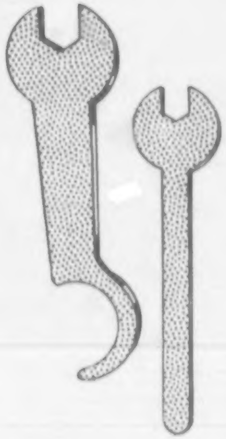




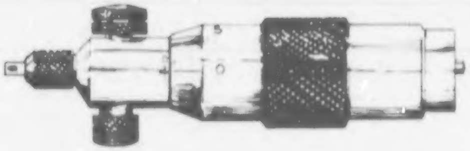
Extension Rods



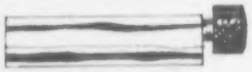
Extension Collar



Wrenches



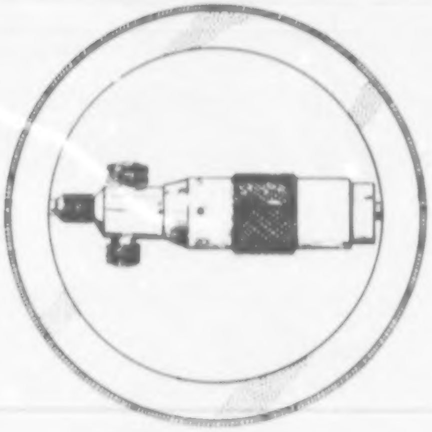
Base Unit



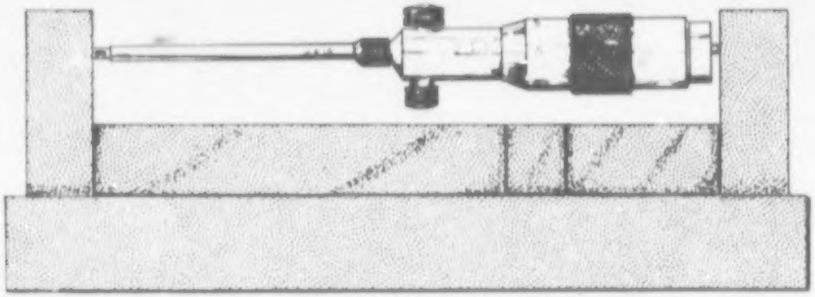
Height Gauge Base

Extension Handle

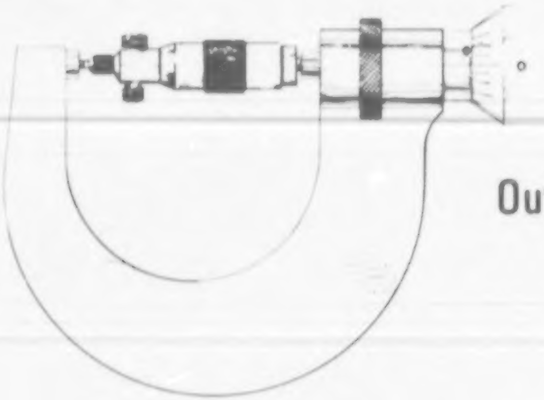
Methods for Checking Accuracy of Inside Micrometers



Ring Gauge Method

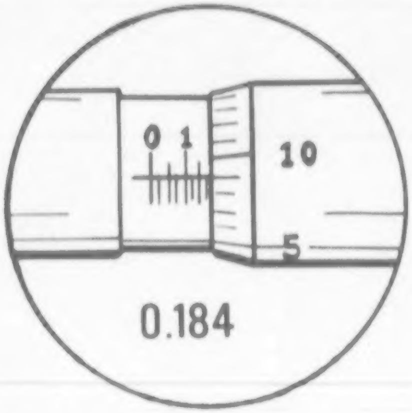


Gauge and Block Method

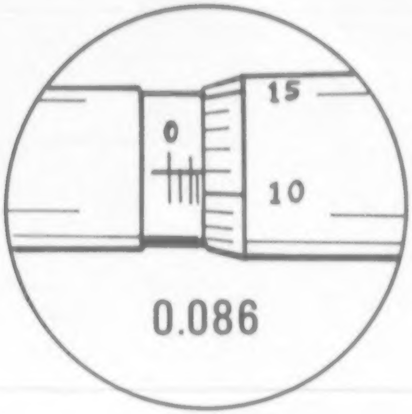


Outside Micrometer Method

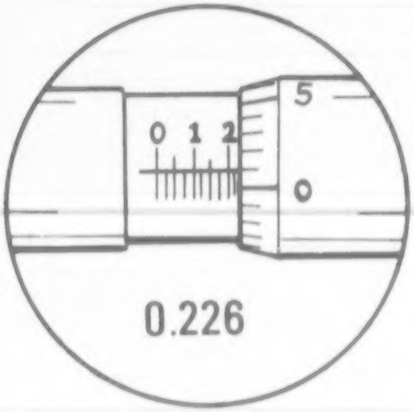
Reading a Micrometer



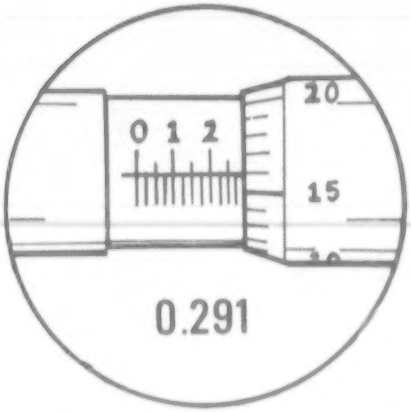
0.184



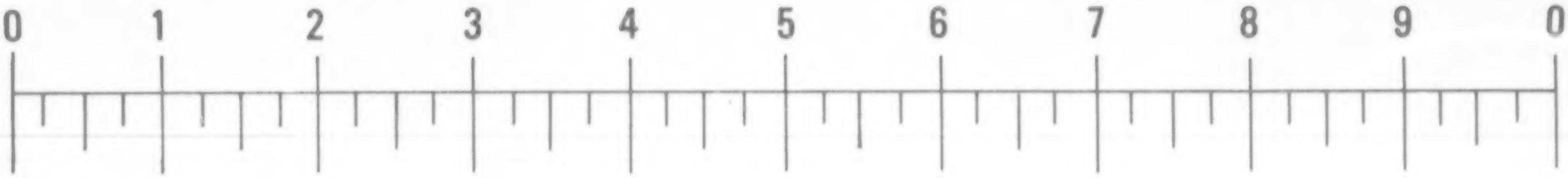
0.086



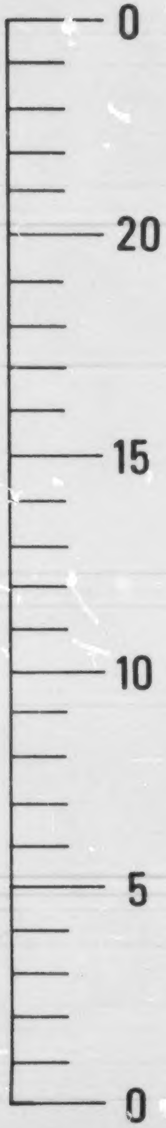
0.226



0.291


0
1
2
3
4
5
6
7
8
9
0

Sleeve Readings



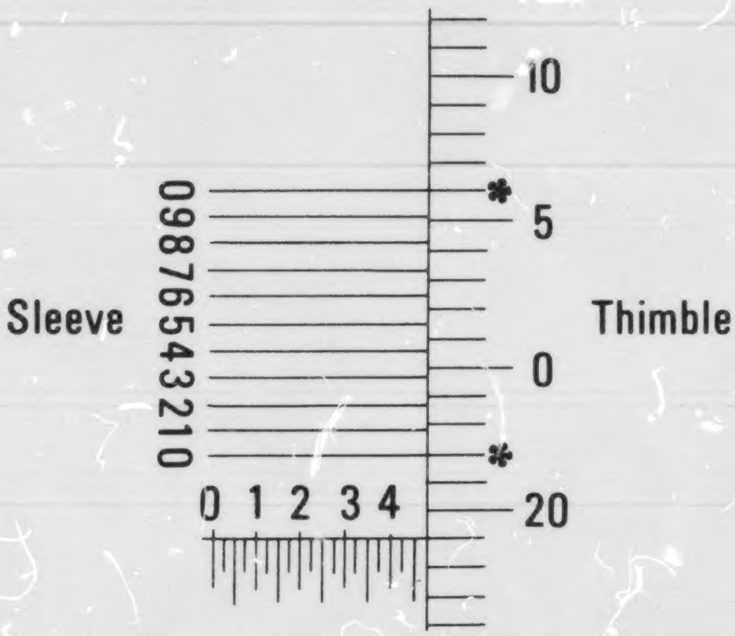
Thimble Sleeve Readings

0
9
8
7
6
5
4
3
2
1
0

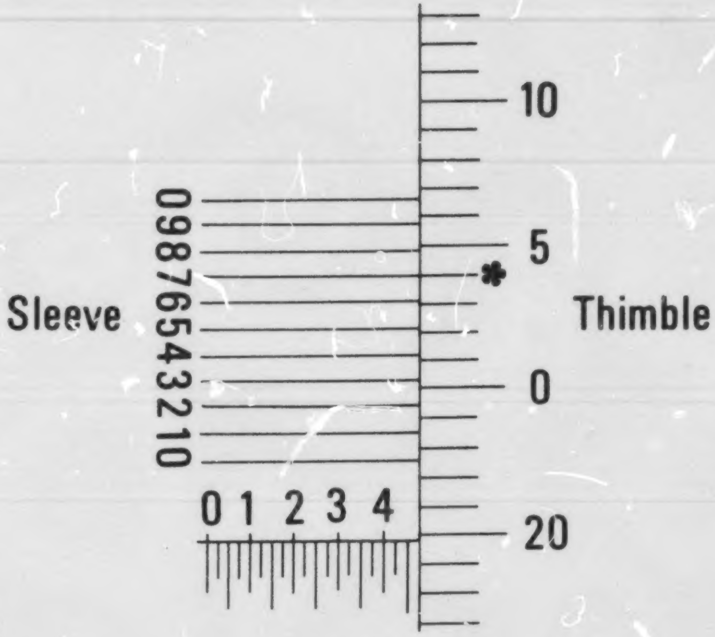
Vernier Sleeve Readings

380

Vernier Micrometer Readings


Sleeve
09876543210
0 1 2 3 4
Thimble
10
*
5
0
*
20

0.4690


Sleeve
09876543210
0 1 2 3 4
Thimble
10
5
*
0
20

0.4697

MEASURING INSTRUMENTS
UNIT X

ASSIGNMENT SHEET #1--DRAW LINES

Directions: With a steel scale and a pen or pencil, draw straight lines of the following lengths:

1. 2 1/4 inches
2. 3 3/4 inches
3. 4 1/2 inches
4. 1 1/8 inches
5. 2 5/8 inches
6. 4 3/8 inches
7. 5 7/8 inches
8. 2 1/16 inches
9. 4 5/16 inches
10. 5 9/16 inches
11. 3 15/16 inches
12. 5 7/32 inches
13. 1 19/32 inches
14. 2 1/64 inches
15. 1 9/64 inches
16. 3 3/64 inches
17. 4 47/64 inches
18. 4 31/32 inches

MEASURING INSTRUMENTS
UNIT X

ASSIGNMENT SHEET #2--MEASURE LINES

Measure the following lines to the specified graduations. Reduce measures to the lowest terms (i.e., 16/64" = 1/4") and write correct answers on the lines.

1. Measure these lines to the nearest quarter of an inch.

   a. ______________________________

   b. ____

   c. _________

   d. ___________________

2. Measure these lines to the nearest eighth of an inch.

   a. ____

   b. _______________________

   c. __________________________________

   d. ____

3. Measure these lines to the nearest sixteenth of an inch.

   a. ____

   b. __________

   c. _________________________

   d. ______________________________

4. Measure these lines to the nearest thirty-second of an inch.

   a. ____

   b. ________________________________

   c. ___________________

   d. ______________________________________

ASSIGNMENT SHEET #2

5. Measure these lines to the nearest sixty-fourth of an inch.

   a. _________________________

   b. ________________________________

   c. ______________________________________

   d. ______________

6. Measure these lines to the nearest centimeter.

   a. ___________

   b. ______________________

   c. ____

   d. ____

7. Measure these lines to the nearest millimeter.

   a. ________

   b. ___________________

   c ____________________________________

   d. ____

MEASURING INSTRUMENTS
UNIT X

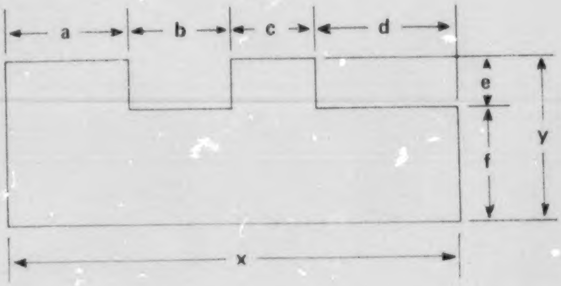
ASSIGNMENT SHEET #3-APPLY LINE MEASUREMENT

Use the rule to measure each lettered dimension on the objects below. Use the finest graduation (64ths) on the rule and reduce measure to lowest terms (i.e., 16/64" = 1/4"). Indicate each individual measurement (in lowest terms) in the correct answer space.

ANSWER

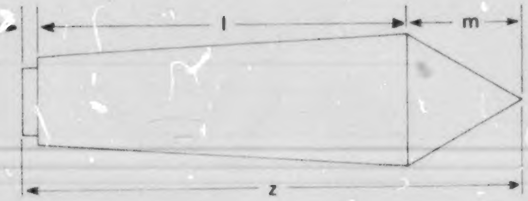
1. a. ____________
b. ____________
c. ____________
d. ____________
e. ____________
f. ____________
x. ____________
y. ____________

1.



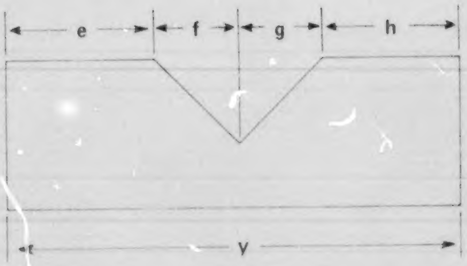
2. k. ____________
l. ____________
m. ____________
z. ____________

2.



3. e. ____________
f. ____________
g. ____________
h. ____________
y. ____________

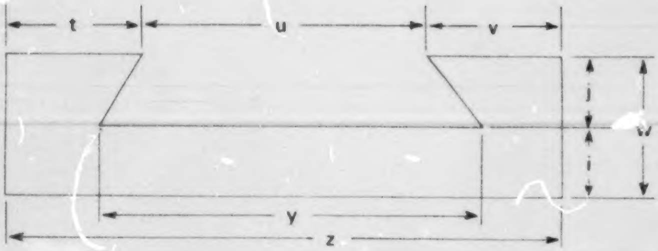
3.



ASSIGNMENT SHEET #3

4. t. ____________
u. ____________
v. ____________
y. ____________
z. ____________
j. ____________
i. ____________
w. ____________

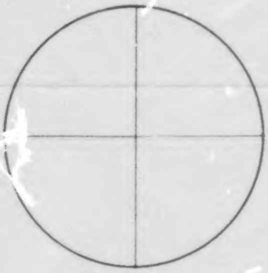
4.



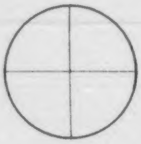
MEASURING INSTRUMENTS
UNIT X

ASSIGNMENT SHEET #4--APPLY CIRCULAR MEASUREMENT

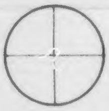
Use the rule to measure each given circle. Use the finest graduation on the rule (64ths) and reduce the dimension to lowest terms (i.e., 16/64" = 1/4"). Make certain that the true diameter of the circle is measured by measuring along the axis line. Indicate the correct dimension in the space provided.



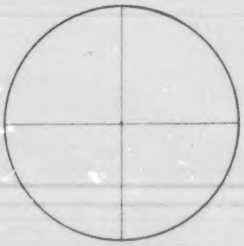
1. ____________



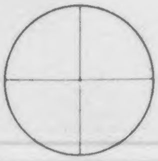
2. ____________



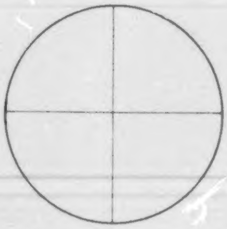
3. ____________



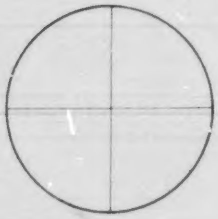
4. ____________



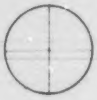
5. ____________



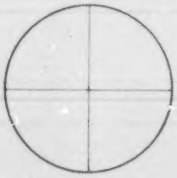
6. ____________



7. ____________



8. ____________



9. ____________

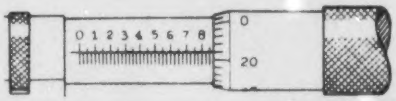
MEASURING INSTRUMENTS
UNIT X

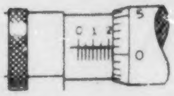
ASSIGNMENT SHEET #5--READ PLAIN MICROMETER SETTINGS

Read the plain micrometer settings below and write the correct answers in the blanks provided.

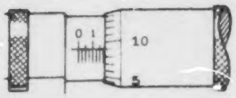
Answers

1. ______
2. ______
3. ______
4. ______
5. ______
6. ______
7. ______
8. ______
9. ______
10. ______
11. ______
12. ______
13. ______
14. ______
15. ______
16. ______
17. ______
18. ______
19. ______
20. ______

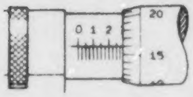

0 1 2 3 4 5 6 7 8
0
20
1.



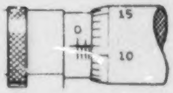
2.



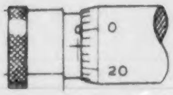
3.



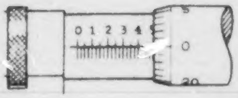
4.

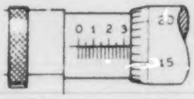


5.

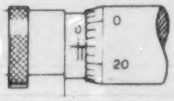


6.

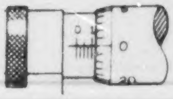

0 1 2 3 4 5
5
0
20
7.



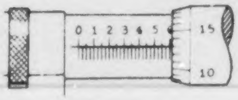
8.

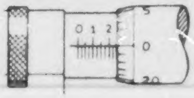


9.

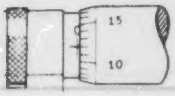


10.

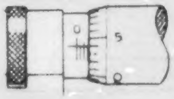

0 1 2 3 4 5 6
15
10
11.



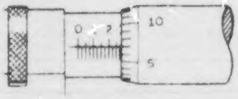
12.



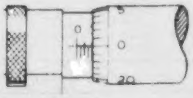
13.



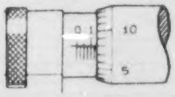
14.



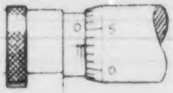
15.



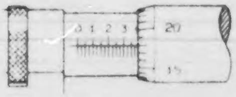
16.



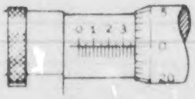
17.



18.



19.



20.

ASSIGNMENT SHEET #5

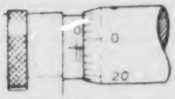
21. ______

22. ______

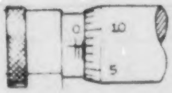
23. ______

24. ______

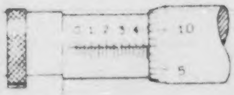
25. ______



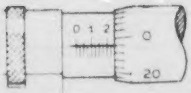
21.



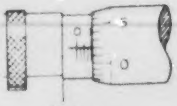
22.



23.



24.



25.

MEASURING INSTRUMENTS
UNIT X

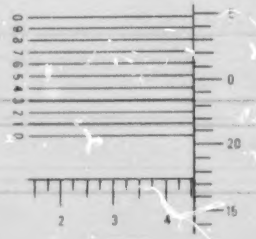
ASSIGNMENT SHEET #6--READ VERNIER MICROMETER SETTINGS

Read the vernier micrometer settings below and write the correct answers in the blanks provided.

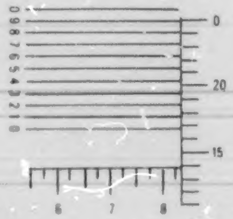
Answers

1. ____________
2. ____________
3. ____________
4. ____________
5. ____________
6. ____________
7. ____________
8. ____________
9. ____________
10. ____________

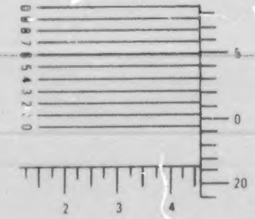
1.


0 9 8 7 6 5 4 3 2 1 0
5
0
20
15
2
3
4

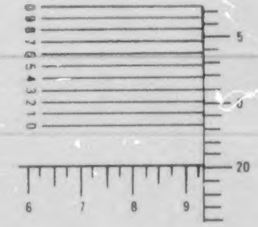
2.


0 9 8 7 6 5 4 3 2 1 0
0
20
15
6
7
8

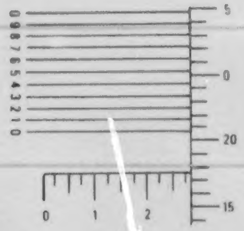
3.


0 9 8 7 6 5 4 3 2 1 0
5
0
20
2
3
4

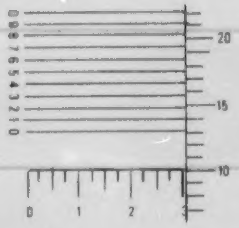
4.


0 9 8 7 6 5 4 3 2 1 0
5
0
20
6
7
8
9

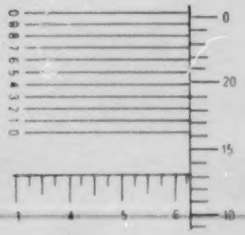
5.


0 9 8 7 6 5 4 3 2 1 0
5
0
20
15
0
1
2

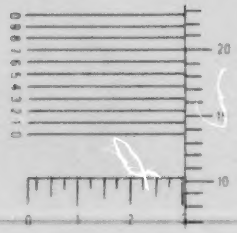
6.


0 9 8 7 6 5 4 3 2 1 0
20
15
10
0
1
2
3

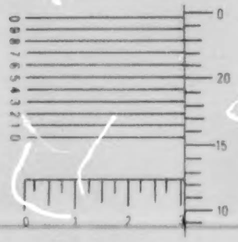
7.


0 9 8 7 6 5 4 3 2 1 0
0
20
15
10
3
4
5
6

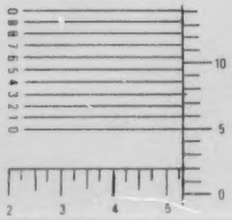
8.


0 9 8 7 6 5 4 3 2 1 0
20
15
10
0
1
2

9.


0 9 8 7 6 5 4 3 2 1 0
0
20
15
10
0
1
2

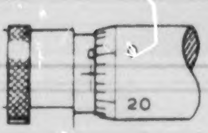
10.


0 9 8 7 6 5 4 3 2 1 0
10
5
0
2
3
4
5

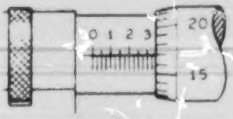
MEASURING INSTRUMENTS
UNIT X

ASSIGNMENT SHEET #7–READ INSIDE MICROMETER SETTINGS

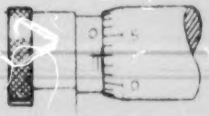
Read the following inside micrometer settings and record your answer under each picture.



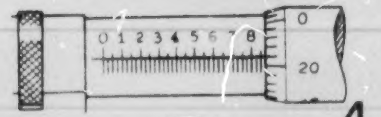
1



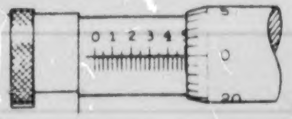
2



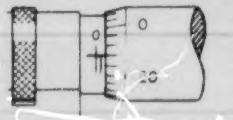
3


0 1 2 3 4 5 6 7 8
0
20

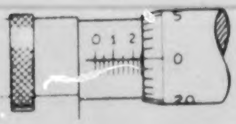
4



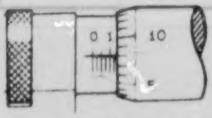
5



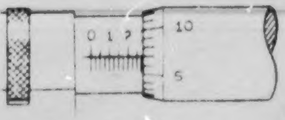
6



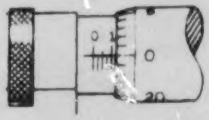
7



8



9



10

MEASURING INSTRUMENTS
UNIT X

ANSWERS TO ASSIGNMENT SHEETS

Assignment Sheet #1--Evaluated to the satisfaction of the instructor

Assignment Sheet #2

1. a. 3 1/4
   b. 4 1/2
   c. 1
   d. 2

2. a. 4 7/8
   b. 2 1/2
   c. 3 5/8
   d. 4 1/4

3. a. 4 5/8
   b. 1 1/16
   c. 2 5/8
   d. 3 1/4

4. a. 4 29/32
   b. 3 15/32
   c. 2
   d. 4 1/16

5. a. 2 3/4
   b. 3 33/64
   c. 4 1/8
   d. 1 33/64

6. a. 3 cm
   b. 6 cm
   c. 1 cm
   d. 12 cm

7. a. 21 mm
   b. 53 mm
   c. 100 mm
   d. 12 mm

Assignment Sheet #3

1. a. 23/32
   b. 19/32
   c. 31/64
   d. 53/64
   e. 19/64
   f. 21/32
   x. 2 5/8
   y. 64/64

2. k. 3/32
   l. 2 9/64
   m. 43/64
   z. 2 57/64

3. e. 55/64
   f. 31/64
   g. 31/64
   h. 51/64
   y. 2 5/8

4. t. 51/64
   u. 1 21/32
   v. 51/64
   y. 2 15/64
   z. 3 15/64
   j. 13/32
   i. 13/32
   w. 13/16

Assignment Sheet #4

1. 1 1/2
2. 49/64
3. 37/64
4. 1 23/64
5. 55/64
6. 1 17/64
7. 1 13/64
8. 33/64
9. 31/32

ANSWERS TO ASSIGNMENT SHEETS

Assignment Sheet #5

1. 0.871
2. 0.226
3. 0.184
4. 0.291
5. 0.086
6. 0.023
7. 0.500
8. 0.342
9. 0.047
10. 0.125
11. 0.613
12. 0.250
13. 0.012
14. 0.079
15. 0.282
16. 0.100
17. 0.133
18. 0.053
19. 0.393
20. 0.375
21. 0.049
22. 0.058
23. 0.483
24. 0.249
25. 0.102

Assignment Sheet #6

1. 0.4678
2. 0.8388
3. 0.4715
4. 0.9453
5. 0.2928
6. 0.3101
7. 0.6383
8. 0.3107
9. 0.3128
10. 0.5270

Assignment Sheet #7

1. 0.023
2. 0.342
3. 0.053
4. 0.871
5. 0.500
6. 0.047
7. 0.250
8. 0.133
9. 0.282
10. 0.125

MEASURING INSTRUMENTS
UNIT X

JOB SHEET #1--USE A PLAIN MICROMETER

I. Tools and equipment

A. Micrometers, plain

1. 0" - 1.000" size

2. 1.000" - 2.000" size

B. Lathe or vise

C. Workpieces

1. New fractional drill bits, assortment of 5

2. New letter size drill bits, assortment of 5

3. Pieces of metal such as cold rolled stock, machined parts, hardened dowels; assortment of 5

(NOTE: All workpieces should be numbered or lettered for reference.)

II. Procedure

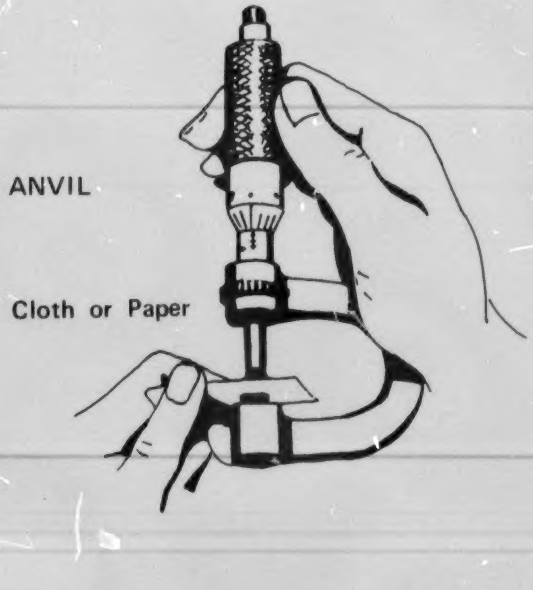
A. Select workpieces that are clean and free of burrs, nicks, or dents

B. Select the proper size micrometer for the workpiece

C. Clean the spindle and anvil of the micrometer (Figure 1)

FIGURE 1

CLEAN SPINDLE AND ANVIL



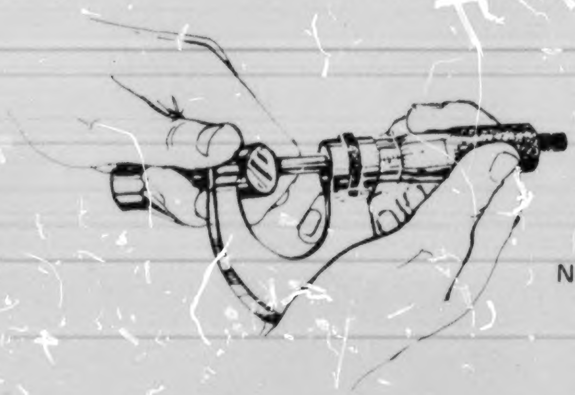
JOB SHEET #1

D. Check the micrometer at zero reference

E. Hold the micrometer according to the type of workpiece

1. Hold the micrometer in the right hand and the workpiece in the left hand to measure a nonstationary object (Figure 2)

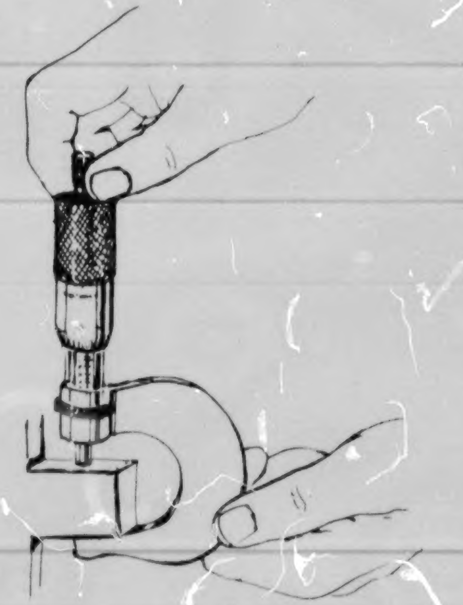
FIGURE 2



NONSTATIONARY OBJECT

2. Hold the micrometer in both hands to measure a stationary object (Figure 3)

FIGURE 3

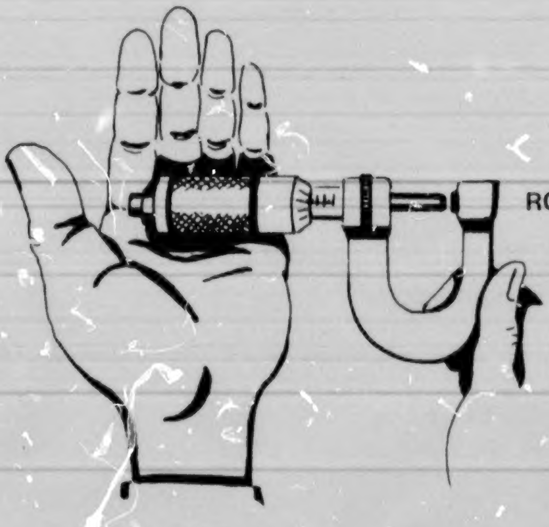


STATIONARY OBJECT

JOB SHEET #1

(NOTE: Roll micrometer along palm of hand or forearm for quick adjustment. See Figure 4.)

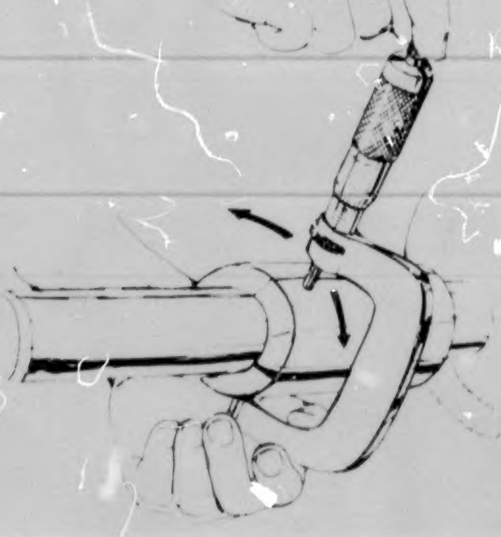
FIGURE 4



ROLL FOR QUICK ADJUSTMENT

F. Place the micrometer directly over the center of the workpiece to be measured (Figure 5)

FIGURE 5



WORK BACK AND FORTH TO FIND TRUE DIAMETER

JOB SHEET #1

G. Turn the thimble of the micrometer until the anvil and spindle contact the workpiece

H. Hold the anvil steady and move the spindle lightly over the workpiece to locate the true centerline

(NOTE: See Figure 5 on the preceding page.)

I. Use ratchet stop or light sense of *feel* to determine exact measurement

J. Observe micrometer readings

(NOTE: Spindle lock can be turned to hold measurement if micrometer must be removed from workpiece; spindle must be unlocked before resetting to a new measurement.)

K. List the readings according to the letter or number on the workpiece

L. Return the micrometer to its correct storage

(NOTE: The spindle and anvil of the micrometer should be left open when stored.)

M. Hand in the listed readings to your instructor for evaluation

MEASURING INSTRUMENTS
UNIT X

JOB SHEET #2--USE A VERNIER MICROMETER

I. Tools and equipment

   A. Micrometers, vernier

      1. 0" - 1.000" size

      2. 1.000" - 2.000" size

   B. Lathe or vise

   C. Workpieces

      1. New number drill bits, assortment of 5

      2. New fractional drill bits, assortment of 5

      3. Pieces of metal such as cold rolled stock, machined parts, hardened dowels; assortment of 5

      (NOTE: All workpieces should be numbered or lettered for reference.)

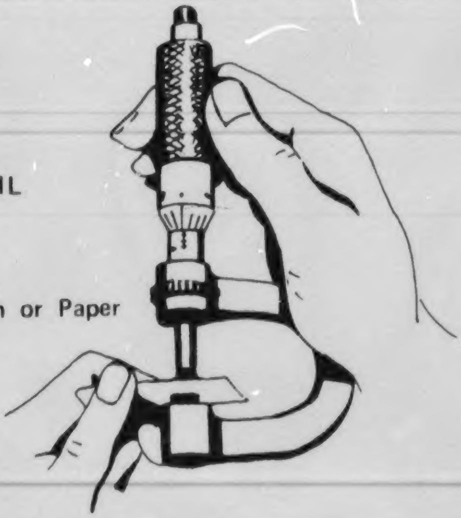
II. Procedure

   A. Select workpieces that are clean and free of burrs, nicks, or dents

   B. Select the proper size micrometer for the workpiece

   C. Clean the spindle and anvil of the micrometer (Figure 1)

FIGURE 1



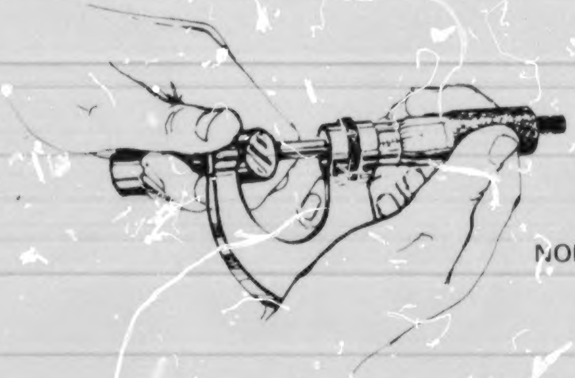
JOB SHEET #2

D. Check the micrometer at zero reference

E. Hold the micrometer according to the type of workpiece

1. Hold the micrometer in the right hand and the workpiece in the left hand to measure a nonstationary object (Figure 2)

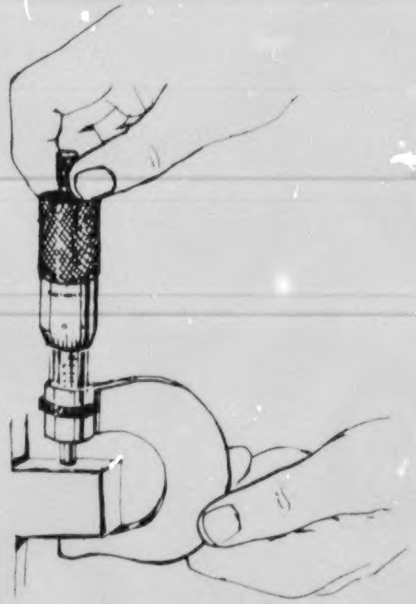
FIGURE 2



NONSTATIONARY OBJECT

2. Hold the micrometer in both hands to measure a stationary object (Figure 3)

FIGURE 3

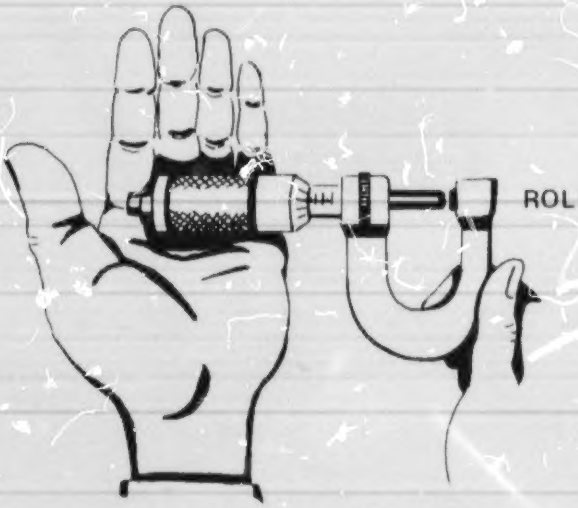


STATIONARY OBJECT

JOB SHEET #2

(NOTE: Roll micrometer along palm of hand or forearm for quick adjustment. See Figure 4.)

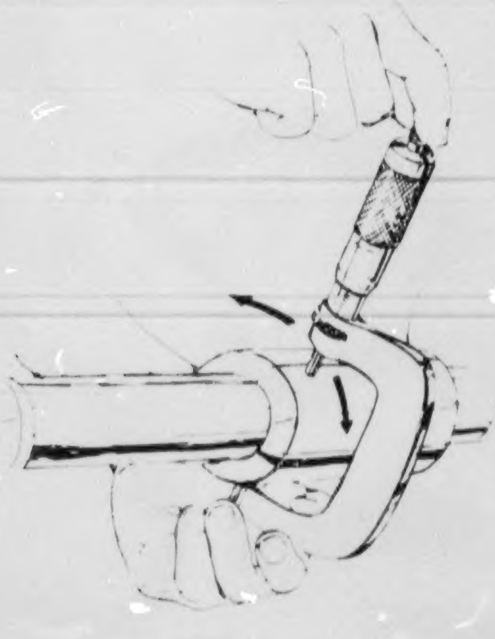
FIGURE 4



ROLL FOR QUICK ADJUSTMENT

F. Place the micrometer directly over the center of the workpiece to be measured (Figure 5)

FIGURE 5



WORK BACK AND FORTH TO FIND TRUE DIAMETER

JOB SHEET #2

G. Turn the thimble of the micrometer until the anvil and spindle contact the workpiece

H. Hold the anvil steady and move the spindle lightly over the workpiece to locate the true centerline

(NOTE: See Figure 5 on the preceding page.)

I. Use ratchet stop or light sense of *feel* to determine exact measurement

J. Observe micrometer readings

(NOTE: Spindle lock can be turned to hold measurement if micrometer must be removed from workpiece; spindle must be unlocked before resetting to a new measurement.)

K. List the readings according to the letter or number on the workpiece

L. Return the micrometer to its correct storage

(NOTE: The spindle and anvil of the micrometer should be left open when stored.)

M. Hand in the listed readings to the instructor for evaluation

MEASURING INSTRUMENTS
UNIT X

JOB SHEET #3 -USE AN INSIDE MICROMETER

I. Materials

   A. Inside micrometer set

      (NOTE: Set should include extension bars, extension collars, base units, and tools for assembly.)

   B. Bored or drilled holes or pipe rings, assortment of 10 in varying sizes

      (NOTE: All workpieces should be numbered or lettered for reference.)

II. Procedure

   A. Select workpieces that are clean and free of burrs, nicks, or dents

   B. Clean the contact point and accessories of the inside micrometer

   C. Check micrometer accuracy

   D. Select the correct extension rod and collar for the required measurement

      1. Observe base unit size and range of movement

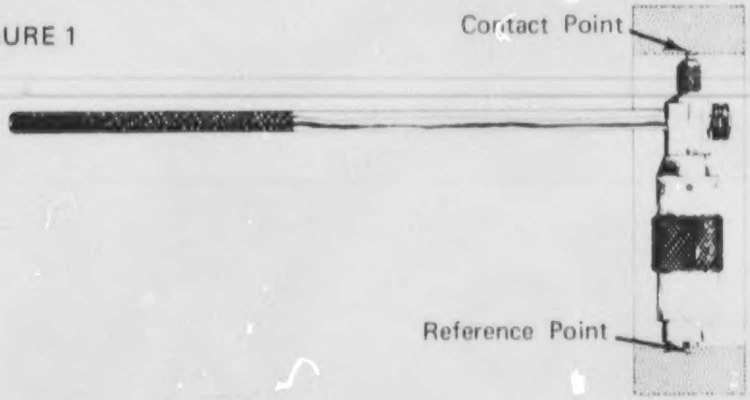
         Example: A 2.000" base unit with a 0.500" movement measures from 2.000" to 2.500"

      2. Add extension collar to utilize full range of extension rod

      3. Use tools to assemble and disassemble accessories

   E. Establish a good reference and contact point during measurement (Figure 1)

FIGURE 1



(NOTE: Support inside micrometer in a comfortable position during use; add extension handle for small hole or deep hole application.)

JOB SHEET #3

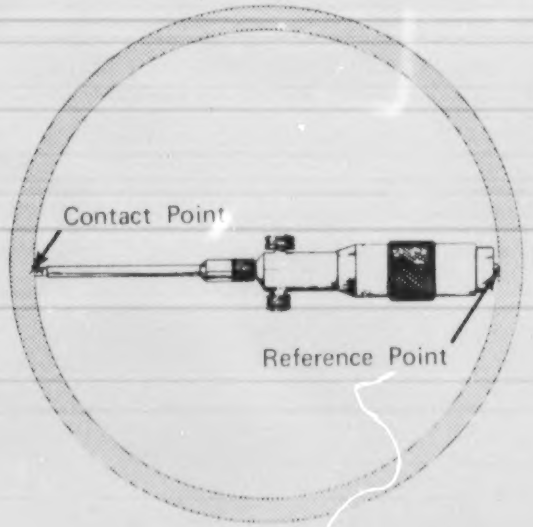
F. Move the contact point from side to side to find the true diameter of the workpiece (Figure 1)

(NOTE: Use light sense of *feel* on the thimble of the base unit.)

G. Observe the total reading from the base unit of the inside micrometer

(NOTE: Add extension rod and/or extension collar to the total measurement. See Figure 2.)

FIGURE 2



H. List the readings according to the letter or number on the workpiece

I. Replace the inside micrometer set in original order after use

MEASURING INSTRUMENTS
UNIT X

NAME ______________________

TEST

1. Match the terms on the right with their correct definitions.

_____ a. Semiprecision measuring instrument graduated in fractional or decimal parts of an inch

_____ b. Marking found on rules and scales to denote unit of length

_____ c. Mistake in the reading or total measurement

_____ d. Accurate or true measurement

_____ e. Starting point of measurement for both workpiece and rule

1. Graduation
2. Steel rule
3. Reference point
4. Error
5. Reliable measure

2. Select basic units of measurement found on rules by placing an "F" next to fractional units, a "D" next to decimal units, and an "M" next to metric units.

_____ a. Tenths

_____ b. Sixty-fourths

_____ c. Decimeter

_____ d. Thirty-seconds

_____ e. Hundredths

_____ f. Centimeter

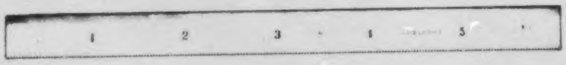
_____ g. Meter

_____ h. Eighths

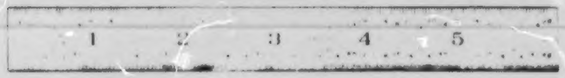
_____ i. Sixteenths

_____ j. Millimeter

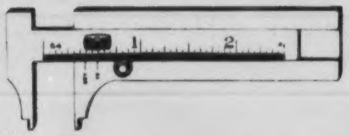
3. Identify types of rules used in shop store work.



a. ______________________________



b. ____



c. ____

4. State the purpose of the measurement transfer.

____

____

5. Complete the following list of procedures for using rules.

   a. Use the proper length and graduation
   b. Use finest graduation for accuracy
   c. Use a good quality rule
   d. ____
   e. Use only for intended purpose
   f. Use whole unit graduation as reference for accuracy
   g. Use rule on edge for better reading
   h. ____

6. Arrange in order the steps for reading a rule by placing the correct sequence number in the appropriate blank.

   ______a. Reduce graduations to lowest terms
   ______b. Select scale of the required units
   ______c. Count whole units
   ______d. Total the number of graduations

7. Select from a list the types of measurements found on outside micrometers by placing an "X" in the appropriate blanks.

______a. Plain measurement--To the nearest thousandth of an inch

______b. Conventional measurement--To the nearest hundredth of an inch

______c. Vernier measurement--To the nearest ten-thousandth of an inch

______d. Universal measurement--To the nearest millimeter

______e. Rule measurement--To the nearest sixty-fourth of an inch

8. Identify the major parts of an outside micrometer.

a.____________

b.____________

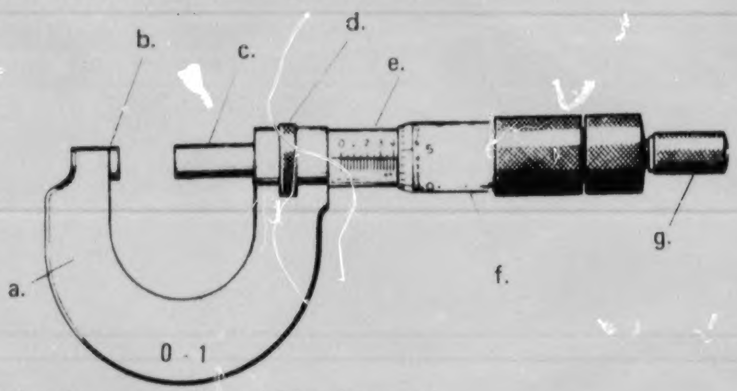
c.____________

d.____________

e.____________

f.____________

g.____________



9. List steps in selecting the proper size outside micrometer.

a. ____

b. ____

10. Select true statements concerning rules for use and care of micrometers by placing an "X" in the appropriate blanks.

______a. The only way to prevent damage to a micrometer is to keep from using it

______b. Clean and lubricate the instrument occasionally

______c. Check the instrument for accuracy before use

______d. There is no danger of overtightening a micrometer

______e. Keep instrument and accessories in proper storage and order

______f. Handle the instrument in the correct manner

______g. Use instrument only for intended purpose

11. Define the term *feel* in using a micrometer.

____

____

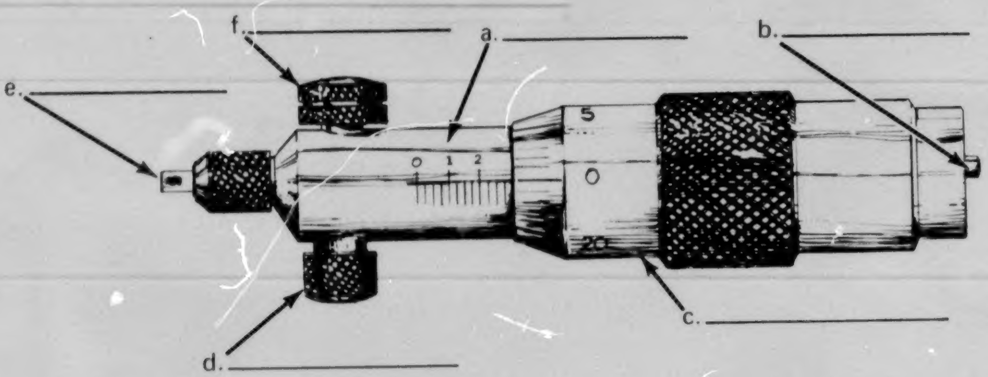
12. Select true statements concerning methods for checking outside micrometers by placing an "X" in the appropriate blanks.

_____ a. Do not close spindle and anvil together

_____ b. Observe zero references on the sleeve and thimble

_____ c. Use a standard bar or disc to check the minimum capacity

13. Identify the parts of an inside micrometer.



14. List four uses of an inside micrometer.

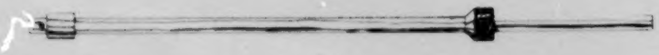
a. ______________________________

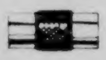
b. ______________________________

c. ______________________________

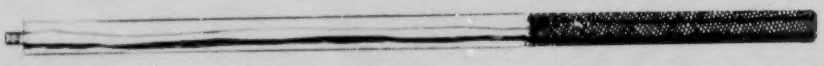
d. ______________________________

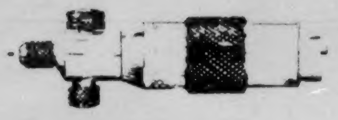
15. Identify accessories used with an inside micrometer.



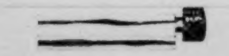


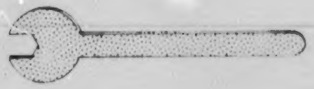
a. ____________ b. ____________





c. ____________ d. ____________





e. ______________________________ f. ______________________________

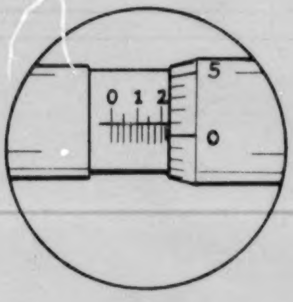
16. Select true statements concerning methods for checking the accuracy of an inside micrometer by placing an "X" in the appropriate blanks.

_____a. Measure the zero reference of an inside micrometer with another inside micrometer

_____b. Measure an object of known accurate measurement or use a standard ring gauge

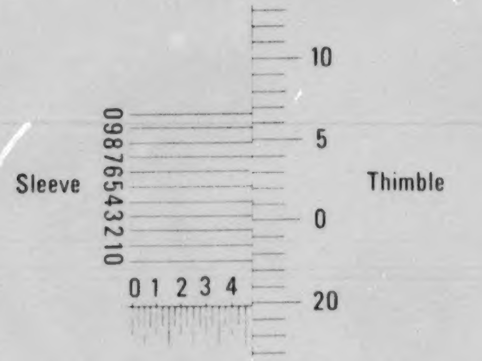
_____c. Use a gauge block holder and gauge blocks to check an extension bar measurement

17. Read the following plain micrometer setting:



Answer _______

18. Read the following vernier micrometer setting:



Answer _______

19. Demonstrate the ability to:
    - a. Draw lines.
    - b. Measure lines.
    - c. Apply line measurement.
    - d. Apply circular measurement.
    - e. Read plain micrometer settings.
    - f. Read vernier micrometer settings.
    - g. Read inside micrometer settings.
    - h. Use a plain micrometer.
    - i. Use a vernier micrometer.
    - j. Use an inside micrometer.

    (NOTE: If these activities have not been accomplished prior to the test, ask your instructor when they should be completed.)

MEASURING INSTRUMENTS
UNIT X

ANSWERS TO TEST

1. a. 2
   b. 1
   c. 4
   d. 5
   e. 3

2. a. D
   b. F
   c. M
   d. F
   e. D
   f. M
   g. M
   h. F
   i. F
   j. M

3. a. Narrow flexible rule
   b. Steel rule
   c. Slide caliper rule

4. Measures lengths taken from dividers and calipers

5. d. Do not bend or distort a steel rule
   h. Use rule along axis parallel to plane of measurement

6. a. 4
   b. 1
   c. 3
   d. 2

7. a, c

8. a. Frame
   b. Anvil
   c. Spindle
   d. Lock
   e. Sleeve
   f. Thimble
   g. Ratchet stop

9. a. Determine the approximate size of the workpiece
   b. Observe the capacity of the outside micrometer on the frame

10. b, c, e, f, g

11. A sense of touch developed to such a degree that two people can measure a workpiece and arrive at measurements that are exactly the same

12. b, c

13. a. Body
    b. Anvil
    c. Thimble
    d. Handle
    e. Rod
    f. Lock screw

14. a. Measure inside diameter
    b. Measure width
    c. Measure height
    d. Transfer measurement to outside spring-joint caliper

15. a. Extension rod
    b. Extension collar
    c. Extension handle
    d. Base unit
    e. Height gauge base
    f. Wrench

16. b, c

17. 0.226

18. 0.4697

19. Evaluated to the satisfaction of the instructor

COUNTER SERVICES
UNIT XI

UNIT OBJECTIVE

After completion of this unit, the student should be able to identify various tools and service equipment sold in parts stores, measure bolts and threads, list ways to handle exchange and defective items, complete a sales ticket and a credit memo, and service a battery. This knowledge will be evidenced by correctly performing the procedures outlined in the assignment and job sheets and by scoring 85 percent on the unit test.

SPECIFIC OBJECTIVES

After completion of this unit, the student should be able to:

1. Match terms related to counter services with their correct definitions.
2. Identify various hand tools and service equipment commonly sold in parts stores.
3. Identify the different types of fasteners.
4. Select ways of measuring bolts and threads.
5. List items needed to write up a sales ticket or invoice.
6. Select true statements concerning handling exchange items and cores.
7. Select true statements concerning handling defective items.
8. Arrange in order the correct way to accept "new" returned merchandise for credit.
9. Arrange in order the procedures used in filling a battery with electrolyte.
10. Complete a sales ticket.
11. Complete a credit memo.
12. Demonstrate the ability to:
    a. Measure battery electrolyte with a hydrometer.
    b. Load test a battery.

COUNTER SERVICES
UNIT XI

SUGGESTED ACTIVITIES

I. Provide student with objective sheet.

II. Provide student with information, assignment, and job sheets.

III. Make transparencies.

IV. Discuss unit and specific objectives.

V. Discuss information and assignment sheets.

VI. Discuss and demonstrate the procedures outlined in the job sheets.

VII. Carefully review items related to battery safety from "Safety," UNIT IV, before having students complete the job sheets in this unit.

VIII. Take a field trip to a local parts dealer to observe counter persons performing duties.

IX. Provide students with blank warranty tags and "merchandise return" forms and have them practice filling them out.

X. Give test.

INSTRUCTIONAL MATERIALS

I. Included in this unit:

   A. Objective sheet

   B. Information sheet

   C. Transparency masters

      1. TM 1--Types of Screwdrivers
      2. TM 2--Types of Pliers
      3. TM 3--Types of Wrenches
      4. TM 4--Types of Wrenches (Continued)
      5. TM 5--Components of a Socket Set
      6. TM 6--Types of Sockets
      7. TM 7--Special Purpose Sockets
      8. TM 8--Types of Hammers
      9. TM 9--Types of Punches

10. TM 10--Types of Chisels
11. TM 11--Types of Files
12. TM 12--Types of Parts Cleaning Tools
13. TM 13--General Shop Tools
14. TM 14--General Shop Tools (Continued)
15. TM 15--General Shop Tools (Continued)
16. TM 16--Battery Service Tools
17. TM 17--Starter Service Tools
18. TM 18--Charging System Service Tools
19. TM 19--Ignition Service Tools
20. TM 20--Fuel System Service Tools
21. TM 21--Exhaust System Service Tools
22. TM 22--Cooling System Service Tools
23. TM 23--Lubrication Service Tools
24. TM 24--Brake Service Tools
25. TM 25--Front End Service Tools
26. TM 26--Engine Repair Tools
27. TM 27--Engine Repair Tools (Continued)
28. TM 28--Drive Line Tools
29. TM 29--Bolt Head Styles
30. TM 30--Typical Nuts
31. TM 31--Types of Washers
32. TM 32--Machine Screw Head Designs
33. TM 33--Types of Snap Rings
34. TM 34--Miscellaneous Fasteners
35. TM 35--How to Measure Bolts and Threads
36. TM 36--Information Needed on Sales Tickets
37. TM 37--Information Needed on Sales Tickets (Continued)

38. TM 38--Items to Check for on Cores
39. TM 39--Items to Check for on Cores (Continued)
40. TM 40--Items to Check for on Cores (Continued)
41. TM 41--Core Tag
42. TM 42--Warranty Tag
43. TM 43--Merchandise Return Form

D. Assignment sheets
  1. Assignment Sheet #1--Complete a Sales Ticket
  2. Assignment Sheet #2-Complete a Credit Memo

E. Answers to assignment sheets

F. Job sheets
  1. Job Sheet #1--Check a Battery With a Hydrometer
  2. Job Sheet #2--Load Test a Battery

G. Test

H. Answers to test

II. References:

A. *Auto Parts Clerk*. Tallahassee, FL 32306: Division of Vocational Education, Florida Dept. of Education, 1977.

B. *Automotive Wholesaler Counterman's Handbook*. Chicago, IL: Automotive Service Industry Association. 1977.

COUNTER SERVICES
UNIT XI

INFORMATION SHEET

I. Terms and definitions related to counter services

A. Sales ticket or invoice--A ticket which states the date, customer's name, quantity, part number, description, price of items sold, and method of payment

B. Credit memo--A ticket used to give credit or refund to a customer when merchandise is returned

C. Discount--A special reduction made from the list price for certain customers; usually those who buy in large quantities and pay promptly

D. Paid-out--Money spent by the firm; usually used in connection with cash register transactions

E. Handling charge--A nominal charge for processing an item for return through the normal channels of a manufacturer or supplier

F. List price--Suggested retail price

G. Net price--The cost of an item usually determined by the class of the purchaser; for example, dealer net, distributor net, jobber net

H. Open account--An on-going account with good credit for a customer who makes very frequent purchases and is therefore allowed to charge as needed and pay in one lump sum at the end of each month

(NOTE: Counter person must be familiar with open accounts that have been okayed by management.)

Examples: Car dealerships, independent garages, vocational schools

I. Purchase order--A formal request from the buyer to the seller which specifies the conditions of sale and delivery

J. Stock order--A purchase order regularly issued by a wholesaler to bring stock up to the desired level

K. Core--Used item accepted in exchange; it is either rebuilt or reconditioned so it can be resold

L. Warranty--A guarantee from reputable manufacturers to the seller that their product will perform to specifications for a certain use period, usually 90 days

M. Battery electrolyte--Solution of water and sulphuric acid

N. Battery cell--Plates of two different materials immersed in an electrolyte solution

INFORMATION SHEET

O. Vent caps--Caps which close the opening in each battery cell and provide a vent to allow gases to escape

P. Positive post--Larger of the two battery posts; usually marked with a + or "POS"

(NOTE: Some batteries have a red circle around the positive post.)

Q. Negative post--Smaller of the two battery posts; usually marked with a - or "NEG"

(NOTE: Some batteries have a green or black circle around the negative post.)

R. Bolt--Metal rod or pin for fastening objects together; has a head at one end, a screw thread at the other end, and is secured by a nut

S. Screw--Pointed and headed cylindrical fastener that is threaded and designed for insertion into material by rotating

T. Fastener--Device used to secure or hold together separate items

U. Tap--Tool for forming an internal screw thread

V. Die--Internally threaded screw cutting tool used for forming external screw threads

W. Stud--Steel rod with threads on both ends; is screwed permanently into a fixed part at one end and receives a nut on the exposed end

X. SAE--Society of Automotive Engineers

II. Types of hand tools and service equipment commonly sold in parts stores

A. Screwdrivers (Transparency 1)

1. Standard or common
2. Phillips
3. Offset
4. Clutch head
5. Reed and Prince
6. Torx head

B. Pliers (Transparency 2)

1. Slip joint
2. Needle nose
3. Lock grip or vise grip

INFORMATION SHEET

   4. Diagonal side cutter (dikes)
   5. Channel lock
   6. Wire strippers

C. Wrenches (Transparency 3)

   1. Box end
   2. Open end
   3. Combination end
   4. Obstruction box end (Transparency 4)
   5. Flex head
   6. Tubing
   7. Pipe
   8. Adjustable end or Crescent wrench

D. Components of a socket set (Transparency 5)

   1. Socket
   2. Break-over handle
   3. Ratchet handle
   4. Universal joint
   5. Speed handle
   6. Sliding T-handle
   7. Extension

E. Sockets (Transparency 6)

   1. Standard
   2. Deep well
   3. Universal
   4. Six point
   5. Twelve point

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F. Special purpose sockets (Transparency 7)
    1. Phillips
    2. Standard
    3. Clutch
    4. Allen or hex head
    5. Shock absorber
    6. Crowfoot
    7. Drag link
    8. Oil sender
    9. Impact
    10. Torx

G. Hammers (Transparency 8)
    1. Ball-peen
    2. Plastic tip
    3. Rubber
    4. Brass

H. Punches (Transparency 9)
    1. Pin
    2. Starting
    3. Lining-up (alignment)
    4. Drift
    5. Center

I. Chisels (Transparency 10)
    1. Cold
    2. Cape
    3. Round nose
    4. Diamond point

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J. Files (Transparency 11)
   1. Flat
   2. Half-round
   3. Triangle
   4. Round

K. Parts cleaning tools (Transparency 12)
   1. Wire brush
   2. Parts cleaning brush
   3. Carbon scraper
   4. Gasket scraper

L. General shop tools (Transparency 13)
   1. Metal cutting shears
   2. Hacksaw
   3. Tap and die set
   4. Lug wrench
   5. Dial indicator set
   6. Allen wrench set (Transparency 14)
   7. Measuring tape
   8. Snap ring pliers
   9. Torque wrench (Transparency 15)
   10. Puller set

M. Battery service tools (Transparency 16)
   1. Cable puller
   2. Terminal pliers
   3. Hydrometer
   4. Post and cable cleaner
   5. Cable spreader

INFORMATION SHEET

    6. Battery filler
    7. Lifting strap

N. Starter service tools (Transparency 17)

    1. Growler
    2. Amp-volt tester
    3. Bushing driver set
    4. Remote control starter switch

O. Charging system service tools (Transparency 18)

    1. Diode tester
    2. Ohmmeter
    3. Continuity light
    4. Amp-volt tester

P. Ignition service tools (Transparency 19)

    1. Spring gauge
    2. Insulated pliers
    3. Spark plug ratchet and socket
    4. Dwell meter
    5. Feeler gauge
    6. Spark plug gauge
    7. Timing light
    8. Distributor wrenches

Q. Fuel system service tools (Transparency 20)

    1. Fuel pump tester
    2. Tube cutter
    3. Tube flairing tool

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R. Exhaust system service tools (Transparency 21)
   1. Power chisel
   2. Hand pipe cutter
   3. Straightening cone
   4. Pipe expanding tool
   5. Chain wrench

S. Cooling system service tools (Transparency 22)
   1. Fan wrench
   2. Radiator hose remover tool
   3. Hose clamp pliers
   4. Radiator pressure tester
   5. Antifreeze tester
   6. Belt tension gauge

T. Lubrication service tools (Transparency 23)
   1. Grease fitting tool
   2. Oil spout
   3. Oil can
   4. Grease gun
   5. Transmission filler funnel
   6. Oil filter removing tools
   7. P.C.V. tester

U. Brake service tools (Transparency 24)
   1. Adjusting tool
   2. Cylinder hone
   3. Bleeder wrench
   4. Spring pliers
   5. Cylinder clamp

INFORMATION SHEET

6. Disc brake pad spreader
7. Brake shoe adjusting gauge

V. Front-end service tools (Transparency 25)

1. Ball joint removing tool
2. Tie-rod end removing tool
3. Toe-in adjusting wrench
4. Dust cover remover
5. Seal driver set

W. Engine repair tools (Transparency 26)

1. Cylinder taper gauge
2. Piston ring groove cleaner
3. Ridge reamer
4. Cylinder deglazing hone
5. Valve spring compressor (Transparency 27)
6. Piston ring expander
7. Piston ring compressor
8. Valve spring pressure tester

X. Drive line tools (Transparency 28)

1. Clutch aligning set
2. Transmission bushing driver
3. Universal joint press set
4. Transmission bushing puller
5. Flywheel turner
6. Automatic transmission pressure gauge set
7. Differential adjusting tool
8. Snap-ring pliers
9. Dial indicator

INFORMATION SHEET

III. Types of fasteners

  A. Bolts (Transparency 29)

    1. Hex head
    2. Square head (cap screw)
    3. Carriage
    4. Hex socket head
    5. 12-point head
    6. Plow
    7. Hex flange screw
    8. Torx head

  B. Nuts (Transparency 30)

    1. Acorn
    2. Castle
    3. Spring
    4. Wing
    5. Hex
    6. Flanged
    7. Lock
    8. Slotted
    9. Weld
    10. Panel
    11. Specialty
    12. Serrated
    13. Single thread

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C. Washers (Transparency 31)
  1. Flat
  2. Lock
  3. External toothed lock
  4. Internal toothed lock
  5. Countersunk external tooth

D. Machine screw head designs (Transparency 32)
  1. Round
  2. Fillister
  3. Oval
  4. Truss
  5. Pan
  6. Clutch
  7. Hex-slotted
  8. Phillips
  9. Flat

E. Snap rings (Transparency 33)
  1. Internal prong
  2. External hole
  3. Internal hole
  4. External "E"

F. Miscellaneous fasteners (Transparency 34)
  1. Tapping screw
  2. Rivet
  3. Stud
  4. Set screw
  5. Adhesive
  6. Clevis pin

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7. Woodruff key
8. Square key
9. Cotter pin
10. Spring lock pin

IV. Bolt and thread dimensions and the techniques used for their measurements (Transparency 35)

A. Size of bolt--Determined by measuring the diameter of the thread end

B. Length of bolt--Determined by measuring the distance from bottom of the head to the end of the threads

C. Number of threads per inch--Determined by measuring with a ruler or thread gauge the number of threads per inch

(NOTE: Course threads are U.S. Standard, and fine threads are S.A.E. Standard; the three most commonly used metric bolt threads or pitches on an automobile are 1.00, 1.25, and 1.50 mm; American National Standards established the unified screw thread standard.)

V. Items needed to write up a sales ticket or invoice (Transparencies 36 and 37)

A. Who is purchasing item?

1. Customer for work on own vehicle
2. Dealership or garage

B. Check box indicating how ticket is to be paid

1. Cash
2. Check
3. Charge card
4. Open account charge

(NOTE: For #1, 2 and 3, customer's name on the ticket is usually sufficient, but if it is an open account get the company name, address, account number and other information as required by your company policy so they can be billed at the end of the month.)

5. Write P.O.# if available

C. Date of purchase

D. Quantity of items purchased

E. Part number

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F. Name of manufacturer and article

G. List price

H. Net price (if appropriate)

I. Total price of all parts

J. Core charge or any other adjustments

K. Sales tax if applicable

L. Sign or initial the invoice

M. Stamp all copies of invoice "cash" or "charge"

N. Have customer sign invoice if it is a charge sale

(NOTE: Filling out a credit memo is basically the same as a sales ticket; if the forms in your store do not say "CREDIT MEMO" on them, you may be asked to bracket the prices and the total.)

VI. Handling exchange items and "cores"

A. Parts houses very often sell "rebuilt" parts that are less expensive than new parts; these are used parts that have been reconditioned or remanufactured

(NOTE: Alternators, starters, carburetors, fuel pumps, water pumps, brake shoes, and clutch discs are often available as rebuilt units.)

B. When a customer buys a rebuilt unit, his "core" (old unit) is taken in by the parts person as a trade-in or allowance on the rebuilt item

C. Cores must be inspected for completeness, identification, and acceptable condition before credit is given to the customer (Transparencies 38, 39, and 40)

(NOTE: Price lists state the allowances for the core or trade-in unit.)

D. If the core is unacceptable (because of damage or missing parts) or unavailable, partial or no discount or credit is given

(NOTE: Be sure and explain to the customer tactfully *why* the core is not acceptable.)

E. When a core is taken in, be sure to tag it properly, credit it accurately, and check with the manager for the proper rack or core bin so it will be picked up as soon as possible (Transparency 41)

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VII. Handling defective items

A. A warranty is either given in writing or may just be implied

B. Notice of the availability of written consumer warranty information should be posted within the customer's view

1. It is to state that the written warranty is at hand for the customer to read

2. If the product fails during this use period, the manufacturer or supplier may replace, repair, or make an adjustment for the failure to the customer (Transparency 42)

C. Get all the facts on the faulty part

1. Find out what happened and which part failed

2. Find the original sale invoice; you'll need the date and other identifying information

3. Learn what *you* as a counterperson can do to adjust the claim; if in doubt, check with your manager

4. Learn where the defective part must be sent next

D. Paper work should be done as soon as possible

1. Usually a "no charge" or partial charge ticket is written describing the reason for issuing a replacement part

2. You may also need to fill out a "merchandise return" form to manufacturer, giving defect, date of purchase, your invoice number and authority for return (Transparency 43)

3. A warranty tag is placed on the unit itself containing pertinent information such as the defect, identification, date sold, etc.

4. Shipping documents may have to be filled out if the manufacturer is not in your immediate area

5. If for some reason the customer does not want a replacement part or your store does not have one in stock, a credit memo may be written and the customer's money refunded

(NOTE: Be sure you are extremely familiar with the company's policies before giving any credit or refund for returned goods.)

6. If a cash refund is made, fill out a "paid-out" slip to put in the register, so whoever counts the money at the end of the day will not think they came up short

INFORMATION SHEET

E. Other returns to manufacturers or suppliers

1. Defective parts not in warranty may also be returned to manufacturer for repair

2. If this is required, explain to customer what will be done and what the cost of the repair will be

VIII. Correct way to accept "new" returned merchandise for credit

(NOTE: Sometimes a customer buys a part and it does not fit, or he finds out it is not the part that was needed; in which case he/she will want to return it and get a refund.)

A. Customer must have the original sales slip to determine if the part was purchased at that particular store and the price of the item

B. *Inspect* the returned goods to make sure they are in the right box and no parts are missing

(NOTE: Returned new merchandise must be in good condition so it can be sold again.)

C. If parts are complete and in good condition, complete a cash refund ticket or credit memo

D. Return amount of refund to customer

E. Complete a "paid out" slip (or whatever is used by your parts store) to show that the refund was made

F. Return items to stock

(NOTE: Most stores will not allow customers to return electrical items such as voltage regulators, switches, or relays once they have been installed unless they are defective.)

IX. Procedure used in filling a battery with electrolyte

(CAUTION: Batteries and electrolyte must be stored indoors at a temperature of 60°F to 100°F; do not remove vent seals until battery is to be activated, and discard vent seals after removal.)

A. Fill each cell with battery electrolyte evenly to the bottom of the vent wells observing handling precautions listed on electrolyte cartons

B. After cells are filled, tilt battery from side to side to release air bubbles

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C. Recheck levels and add acid as needed

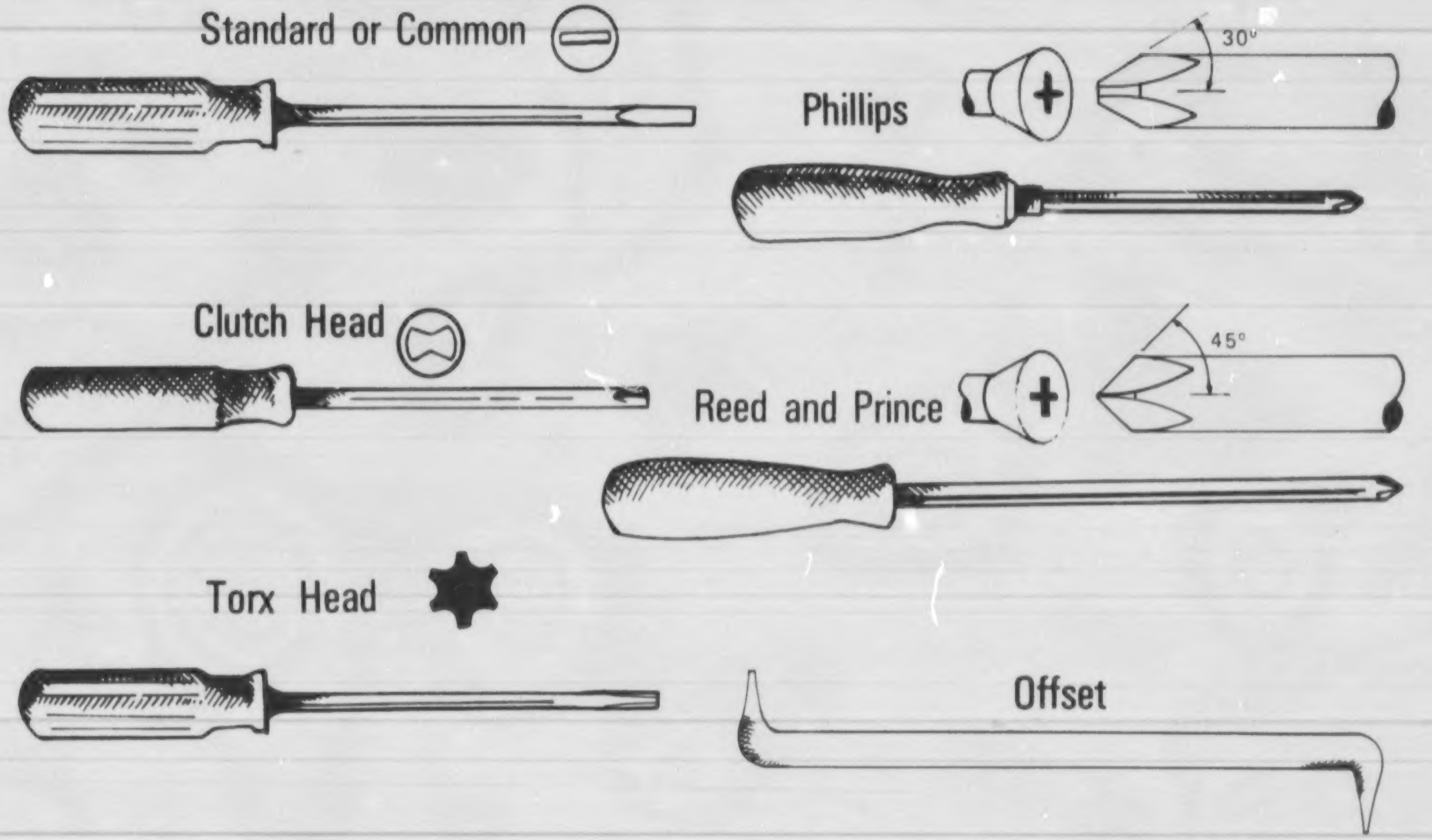
(NOTE: Uneven filling of cells will affect the battery capacity and life.)

D. Install vent caps supplied with battery

E. Check battery case for leakage to make sure that no damage has occurred in handling

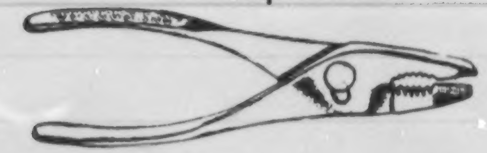
(NOTE: Boost charge 12-volt batteries for 15 minutes at 30 amps or to manufacturer's recommendations.)

Types of Screwdrivers

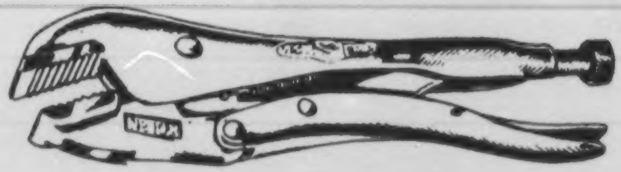

Standard or Common
Phillips
30°
Clutch Head
Reed and Prince
45°
Torx Head
Offset

Types of Pliers

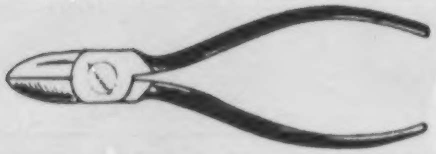
Slip Joint



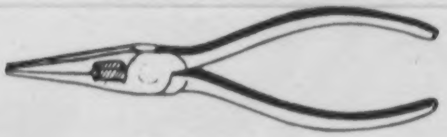
Lock Grip



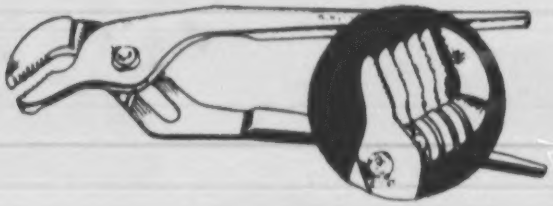
Diagonal Side Cutter



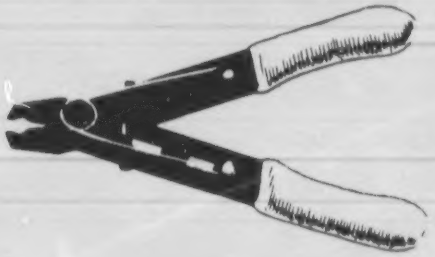
Needle Nose



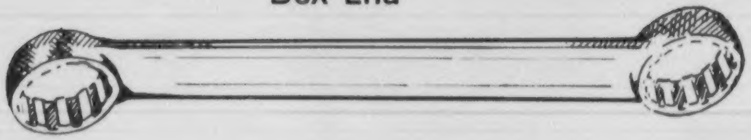
Channel Lock



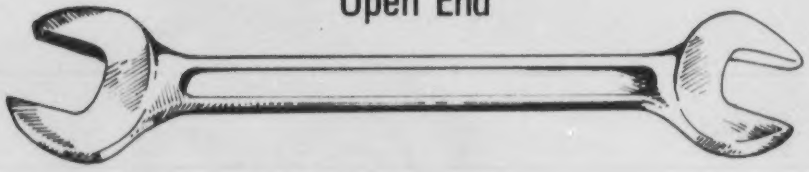
Wire Strippers



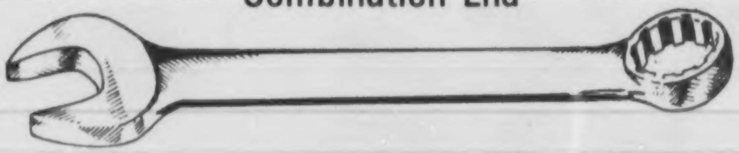
Types of Wrenches



Box End



Open End

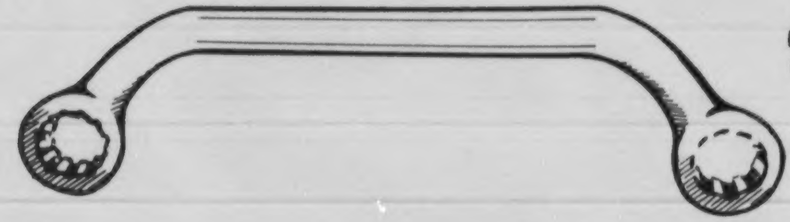


Combination End

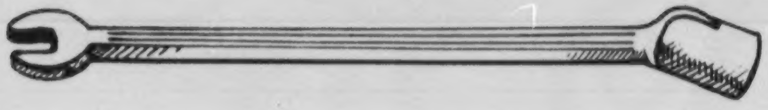
Types of Wrenches

(Continued)

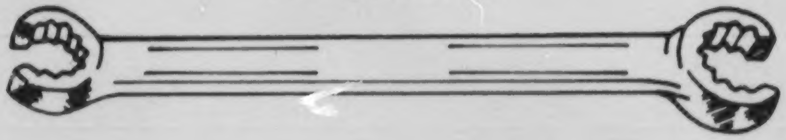
Obstruction Box End



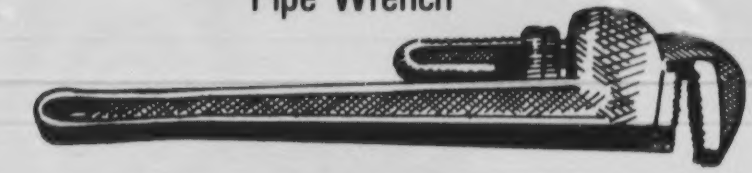
Flex Head



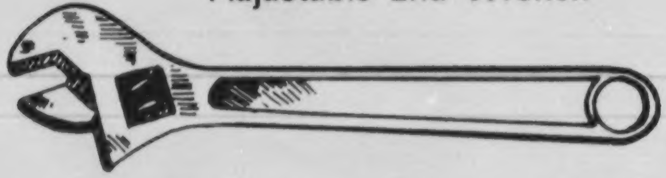
Tubing Wrench



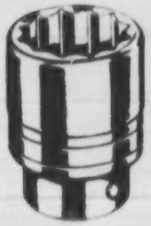
Pipe Wrench

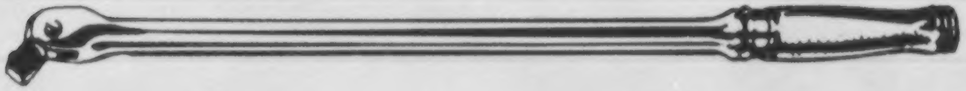


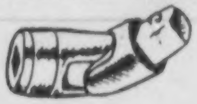
Adjustable End Wrench

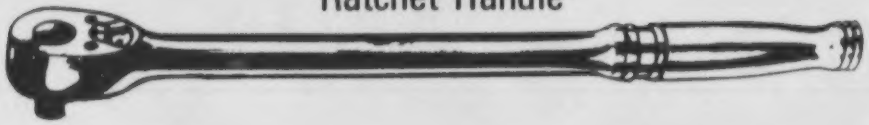


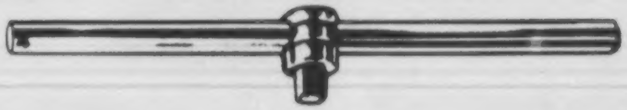
Components of a Socket Set

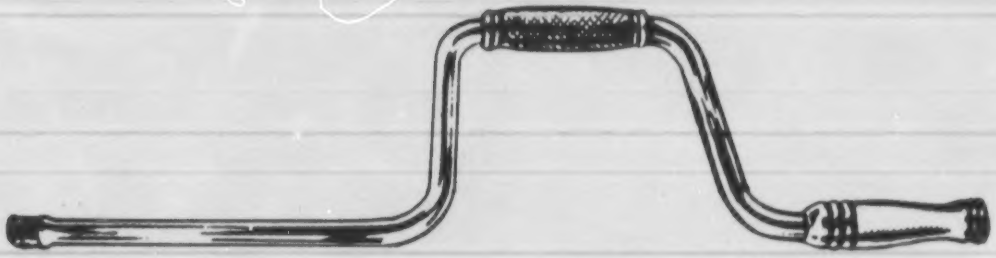

Socket

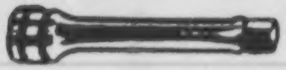

Break–Over Handle


Universal Joint


Ratchet Handle

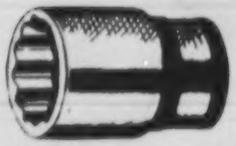

Sliding T-Handle


Speed Handle

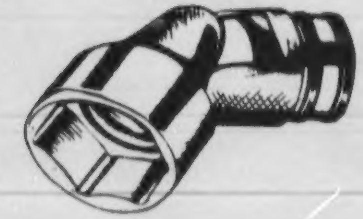

Extension

Types of Sockets

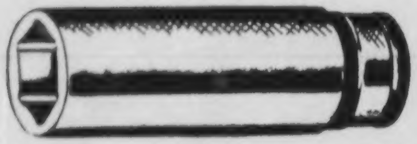
Standard



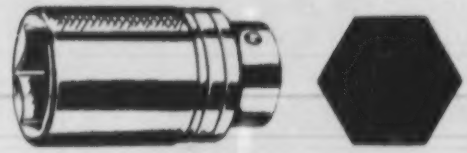
Universal



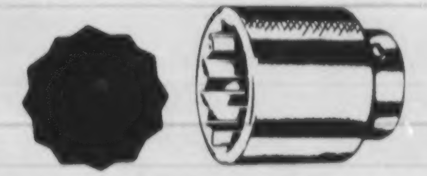
Deep Well



Six Point

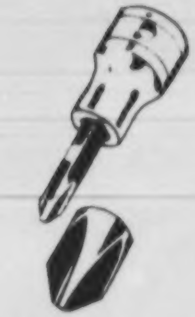


Twelve Point

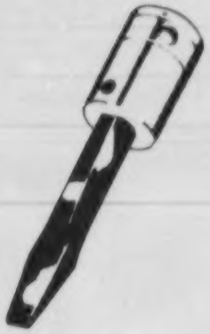


Special Purpose Sockets

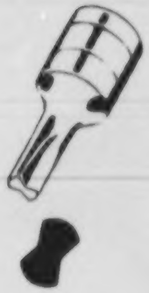
Phillips



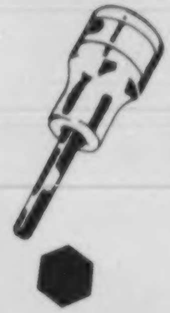
Standard



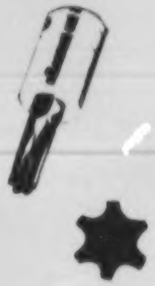
Clutch



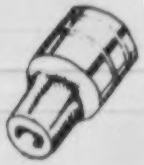
Allen or Hex Head



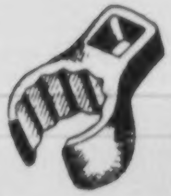
Torx



Shock Absorber



Crowfoot



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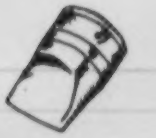
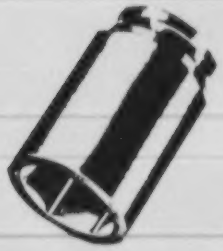
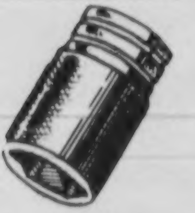


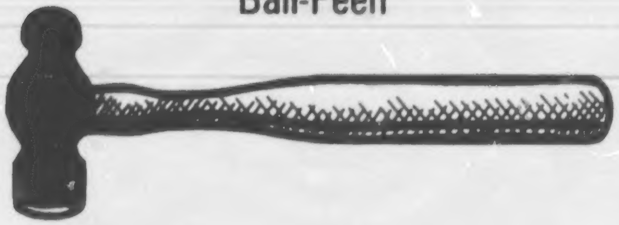
Impact



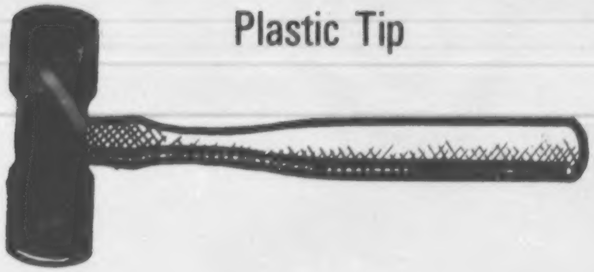
Oil Sender



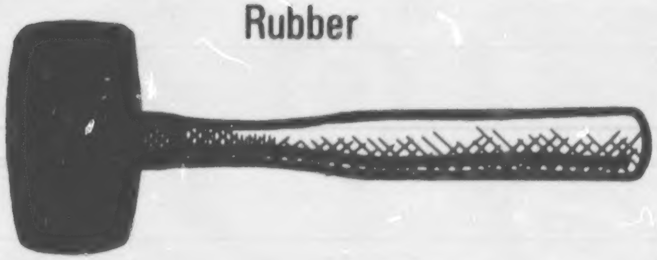
Types of Hammers



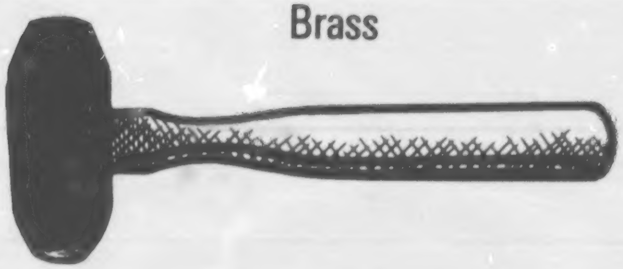
Ball-Peen



Plastic Tip



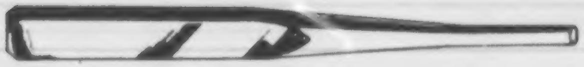
Rubber



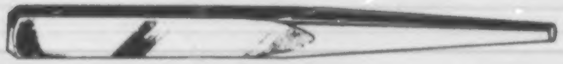
Brass

Types of Punches

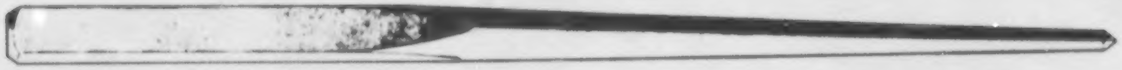
Pin



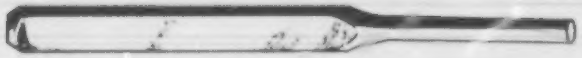
Starting



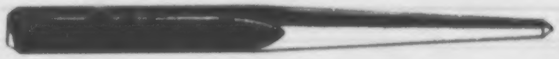
Lining-Up



Drift

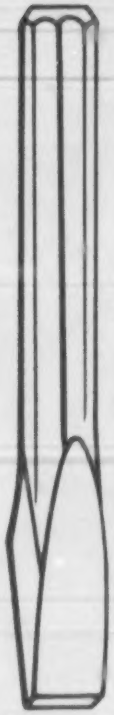


Center

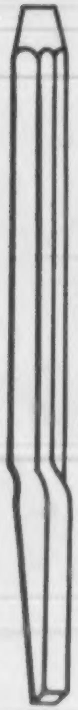


Types of Chisels

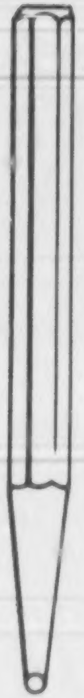
Cold



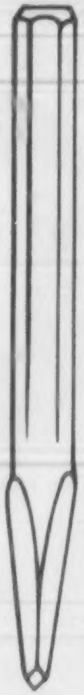
Cape



Round Nose

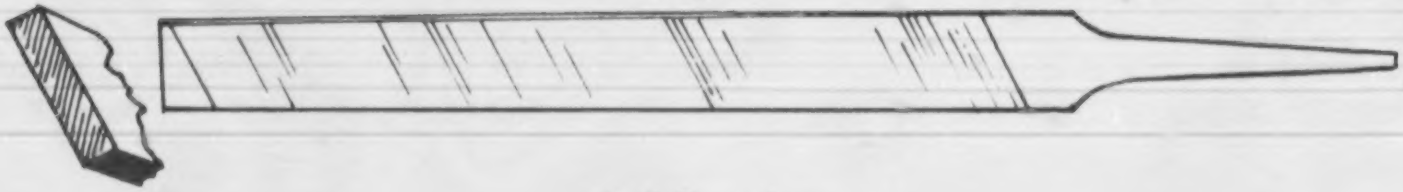


Diamond Point

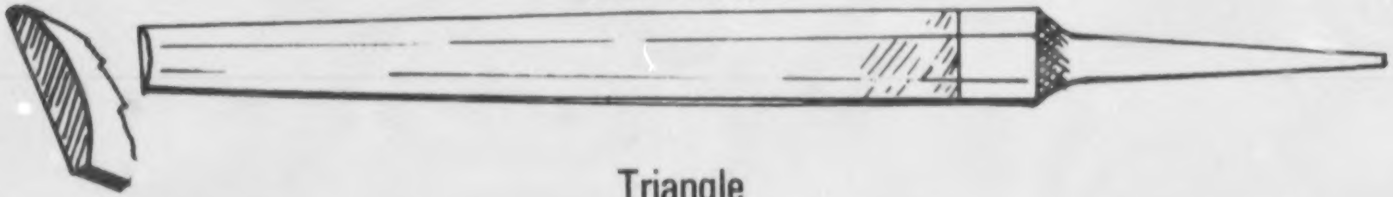


Types of Files

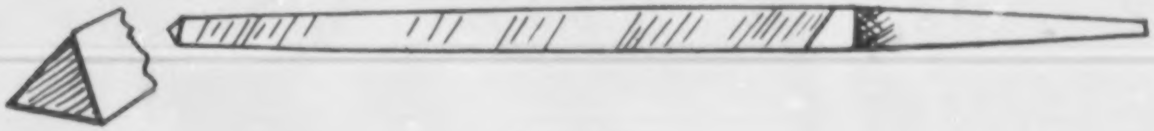
Flat



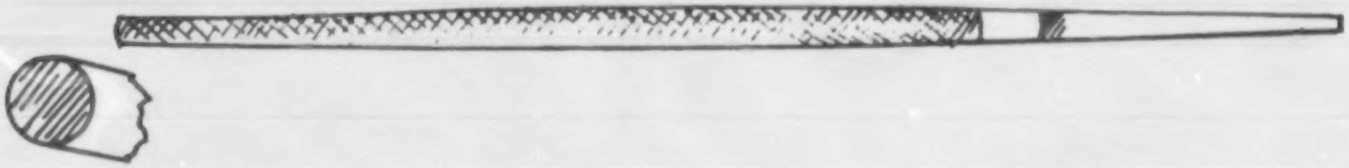
Half Round



Triangle

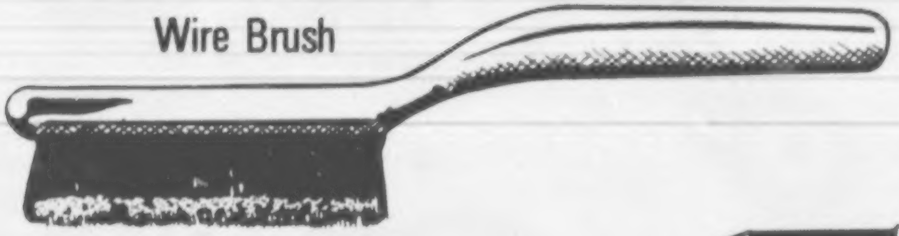


Round

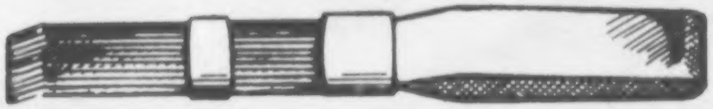


Types of Parts Cleaning Tools

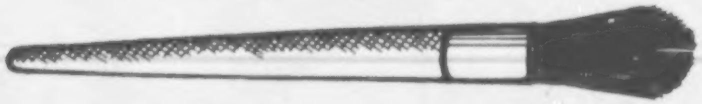
Wire Brush



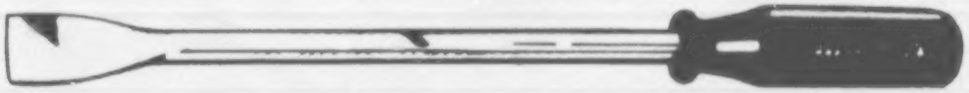
Carbon Scraper



Parts Cleaning Brush

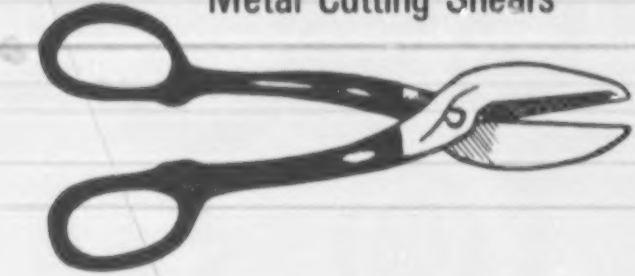


Gasket Scraper

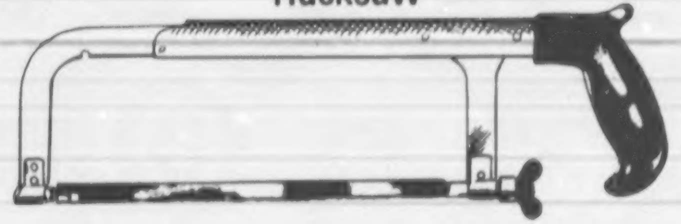


General Shop Tools

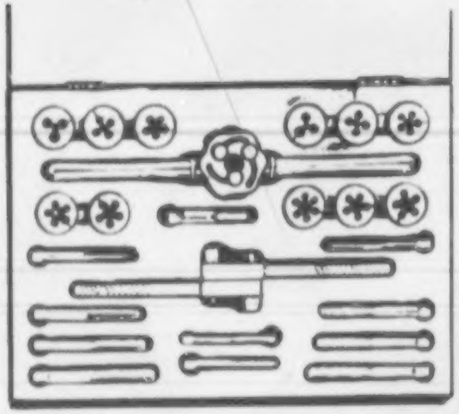
Metal Cutting Shears



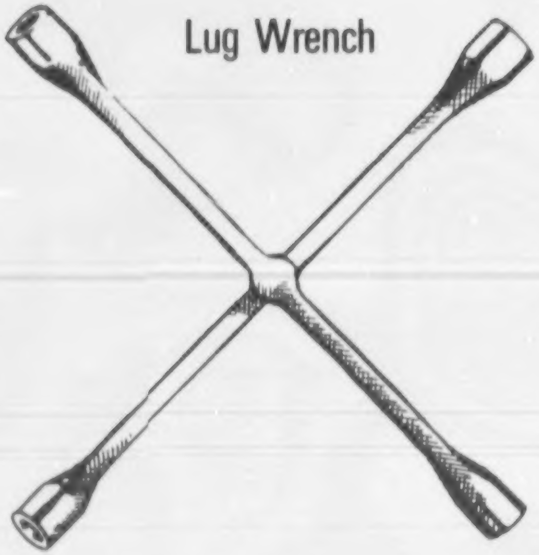
Hacksaw



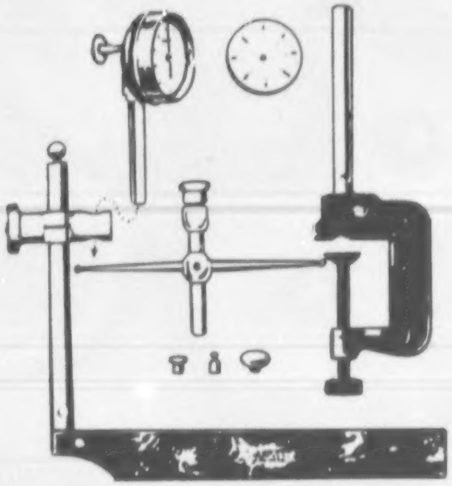
Tap and Die Set



Lug Wrench



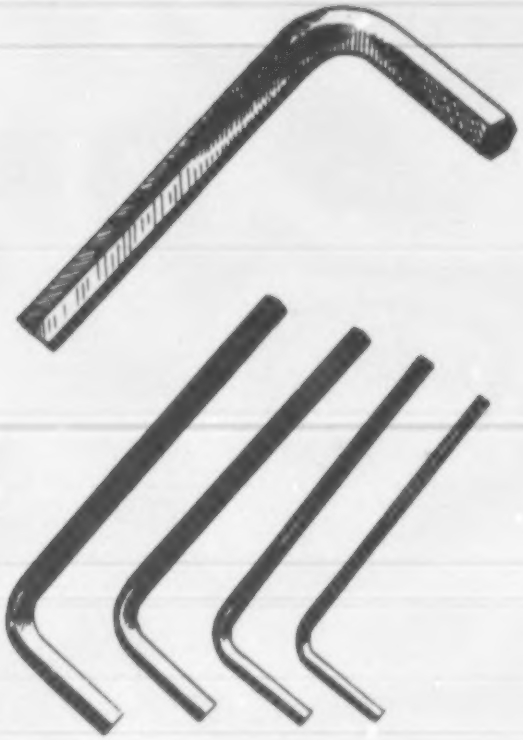
Dial Indicator Set



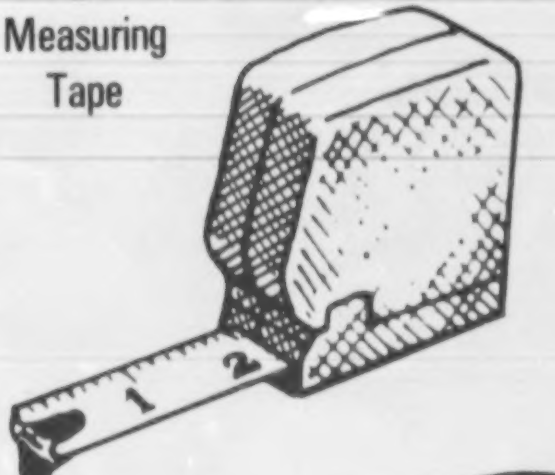
General Shop Tools

(Continued)

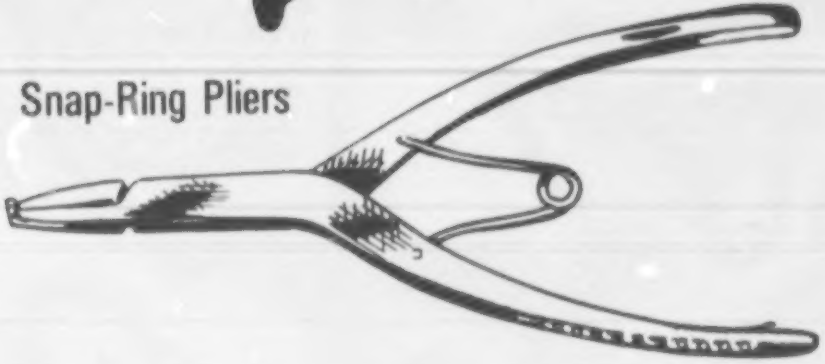
Allen Wrench Set



Measuring Tape



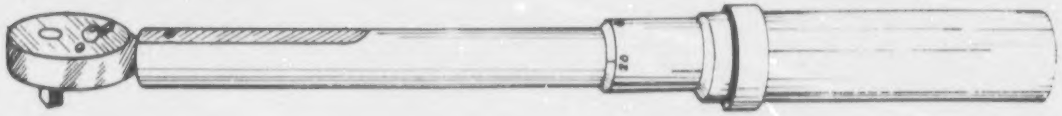
Snap-Ring Pliers



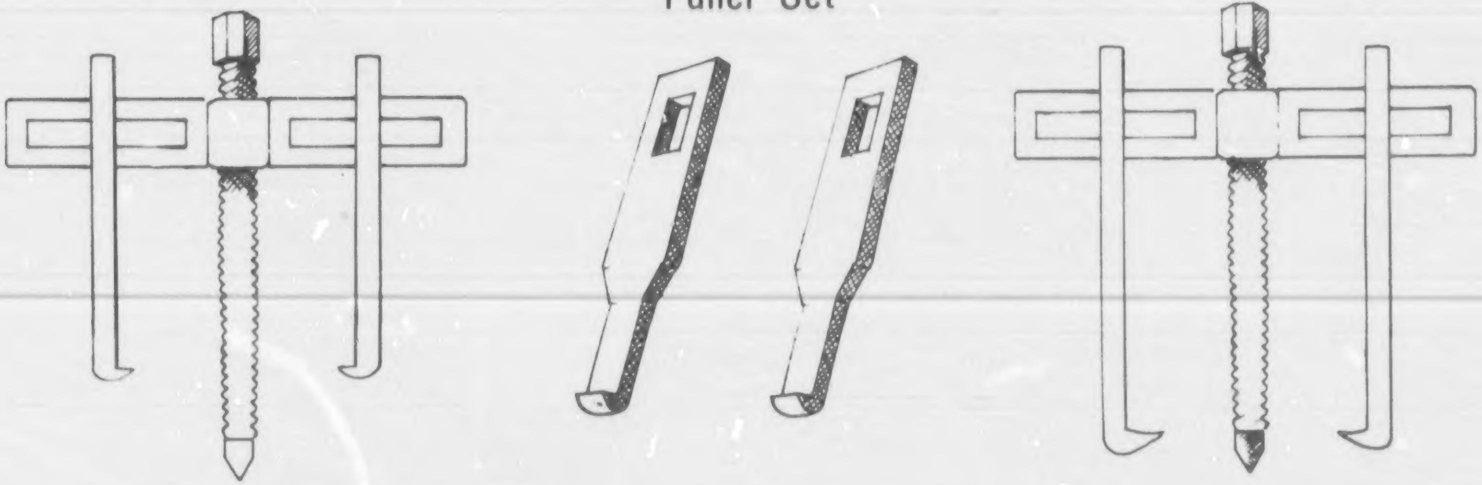
General Shop Tools

(Continued)

Torque Wrench

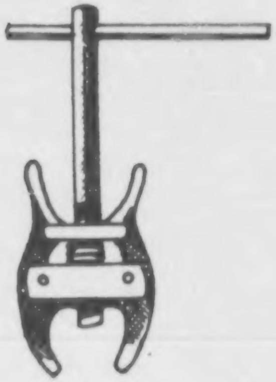


Puller Set

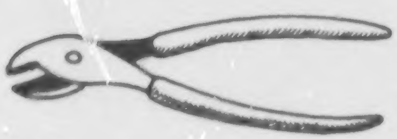


Battery Service Tools

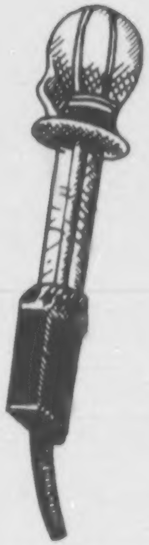
Cable Puller



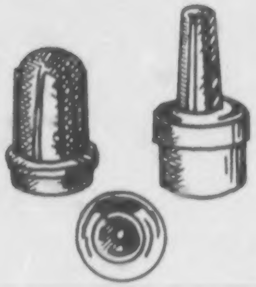
Terminal Pliers



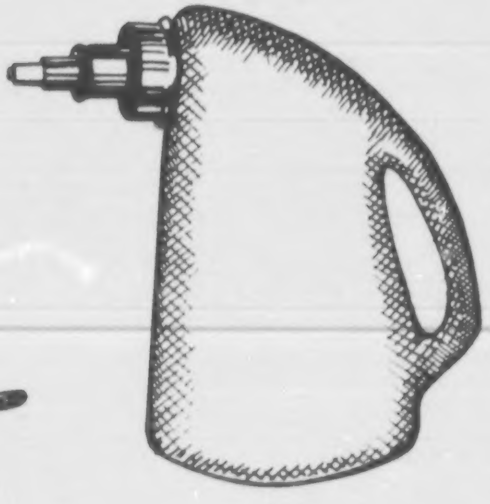
Hydrometer



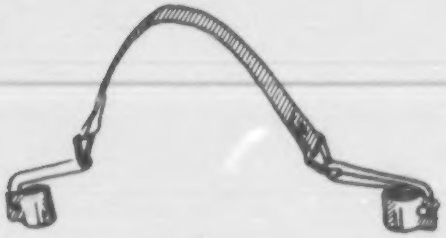
Post and
Cable Cleaner



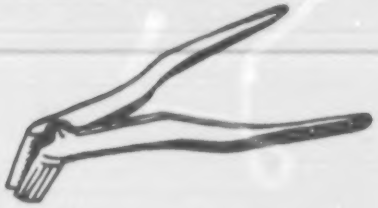
Battery Filler



Lifting strap

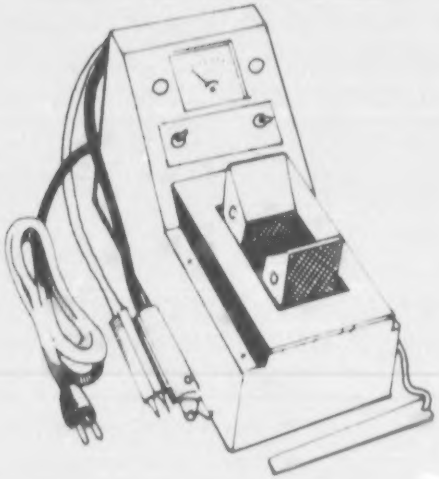


Cable Spreader

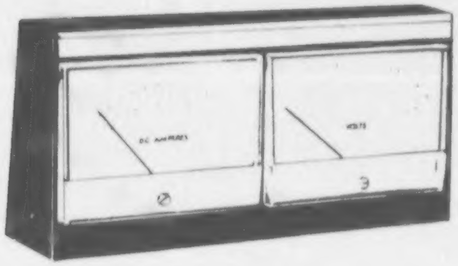


Starter Service Tools

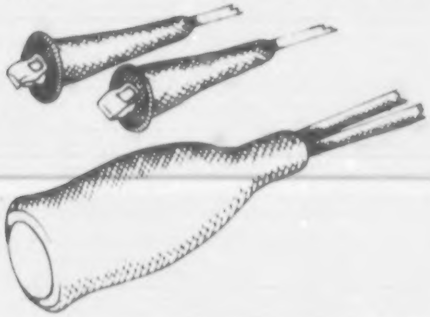
Growler



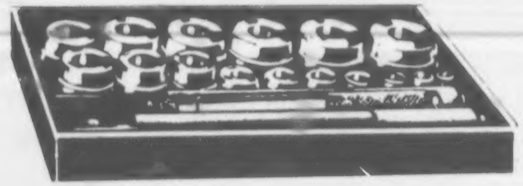
Amp–Volt Tester


D.C. AMPERES
VOLTS

Remote Control Starter Switch

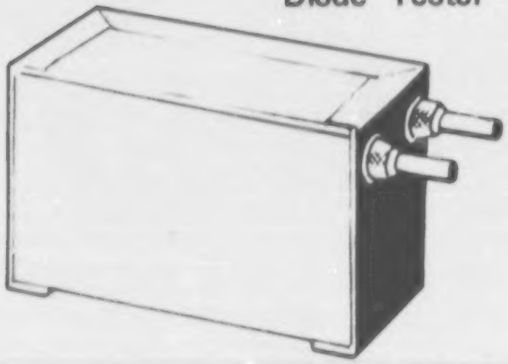


Bushing Driver Set

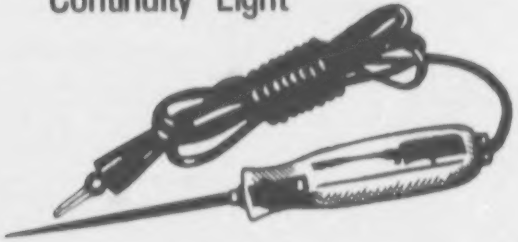


Charging System Service Tools

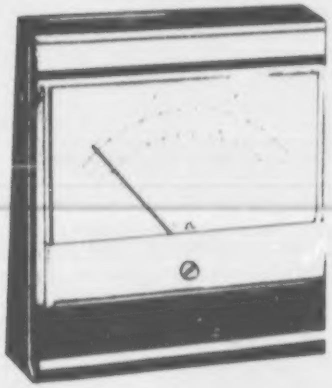
Diode Tester



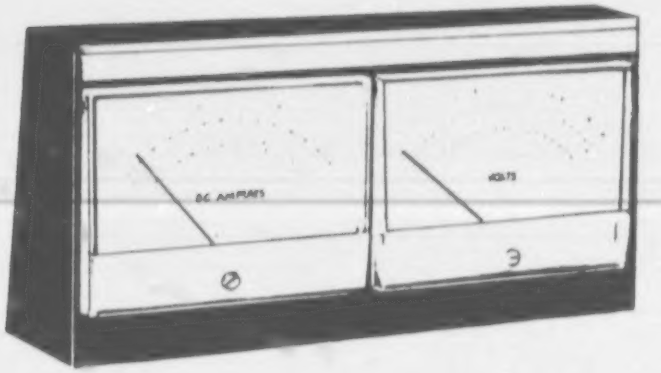
Continuity Light



Ohmmeter

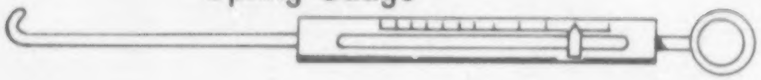


Amp–Volt Tester

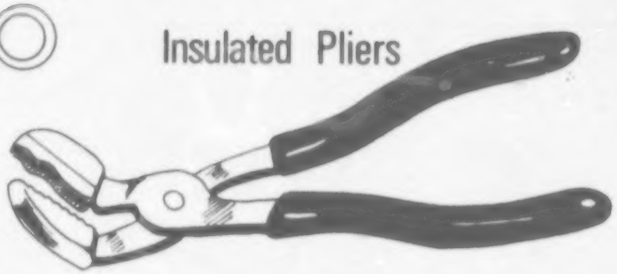

DC AMPERES
VOLTS

Ignition Service Tools

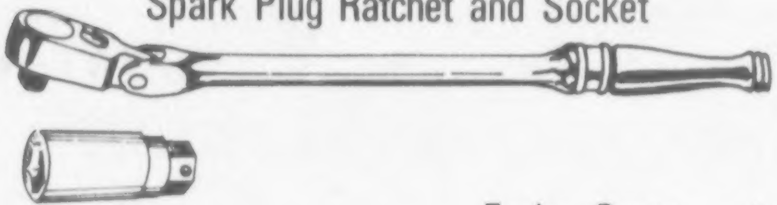
Spring Gauge



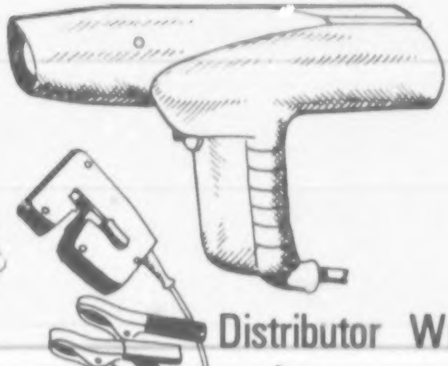
Insulated Pliers



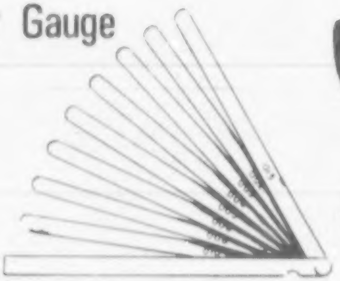
Spark Plug Ratchet and Socket



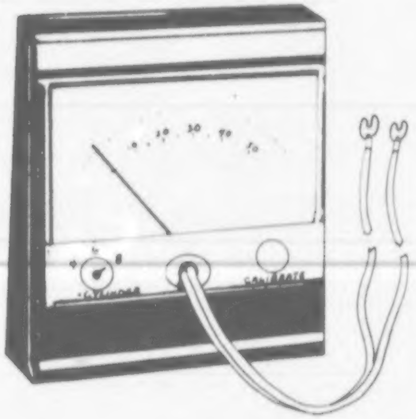
Timing Light



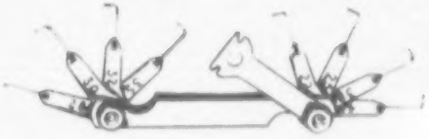
Feeler Gauge



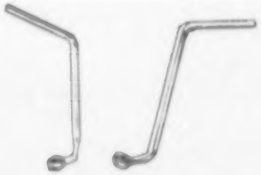
Dwell Meter



Spark Plug Gauge



Distributor Wrenches

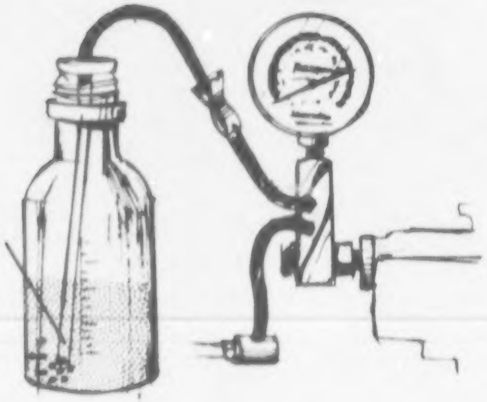


TM 19

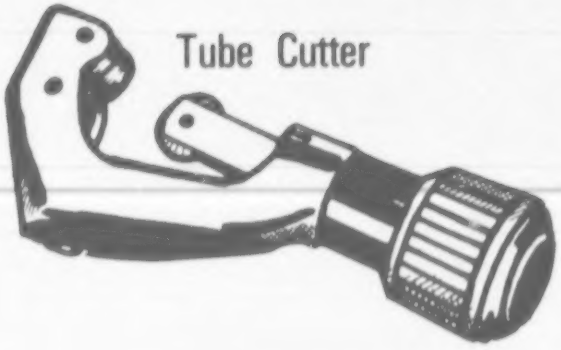
PS-551

Fuel System Service Tools

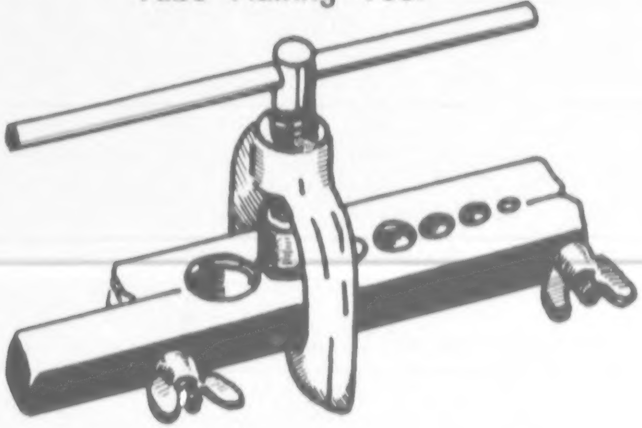
Fuel Pump Tester



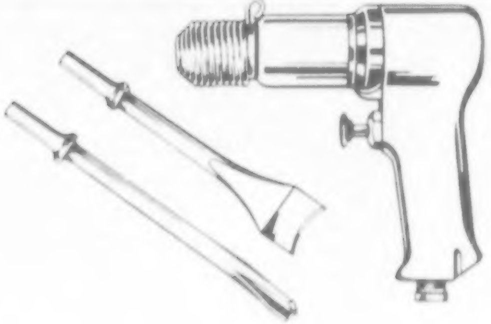
Tube Cutter



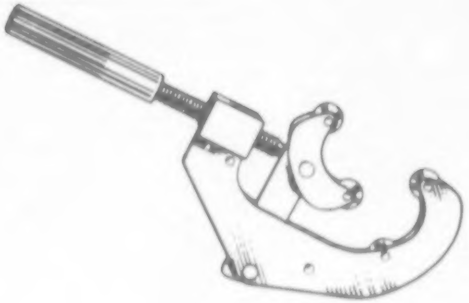
Tube Flairing Tool



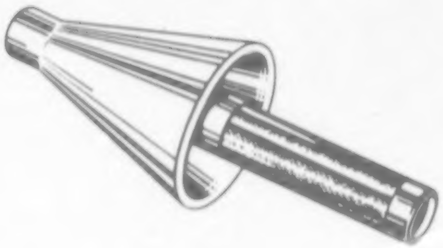
Exhaust System Service Tools



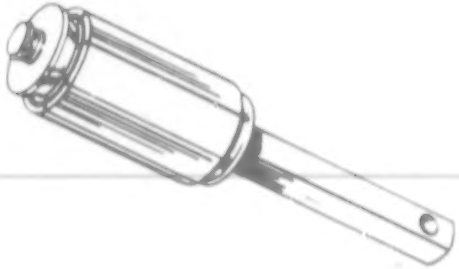
Power Chisel



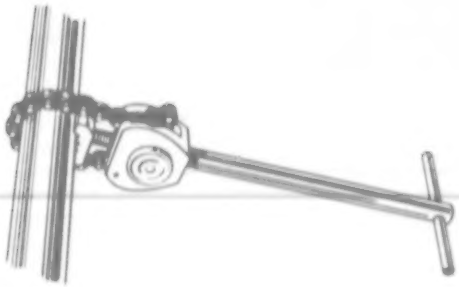
Hand Pipe Cutter



Straightening Cone

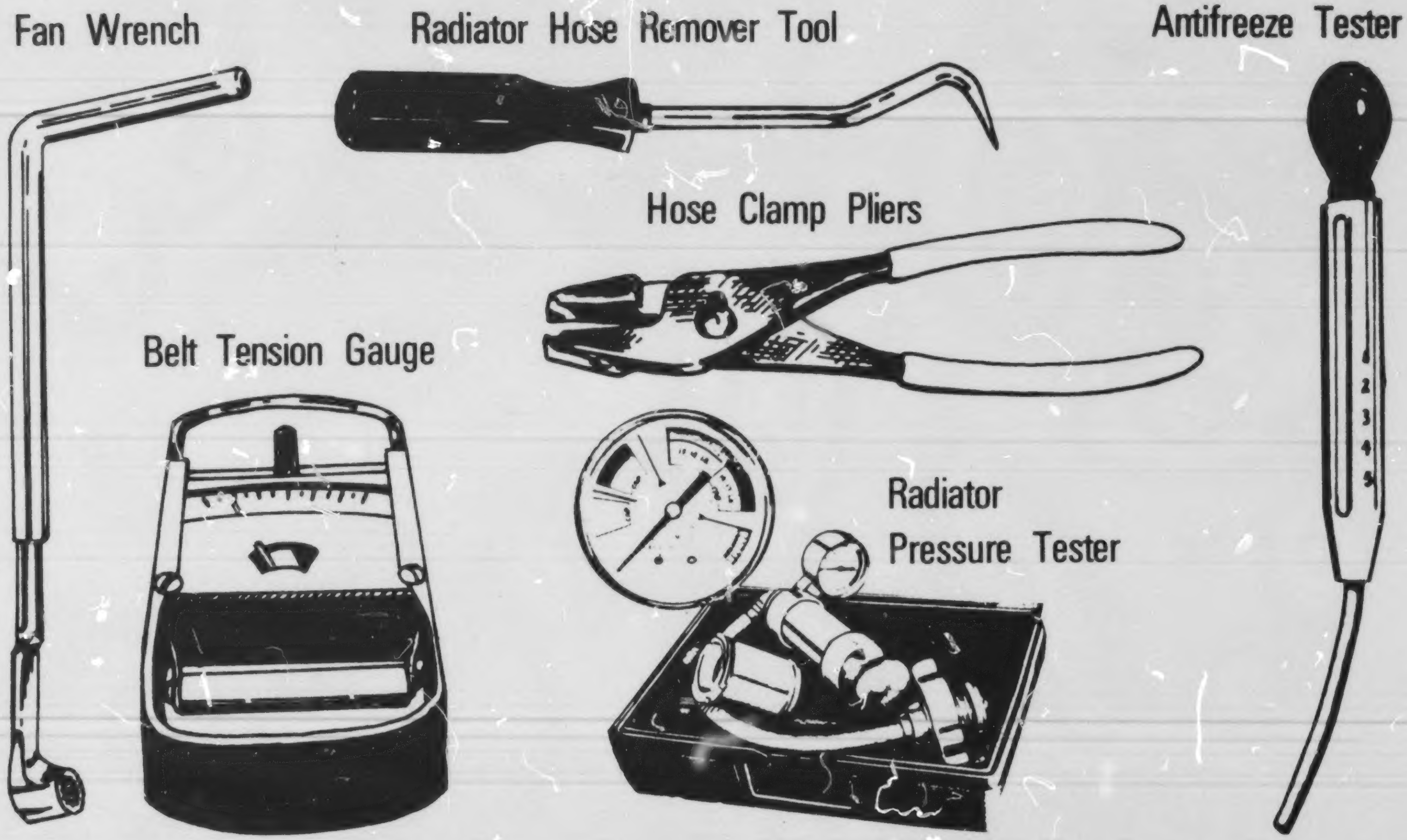


Pipe Expanding Tool



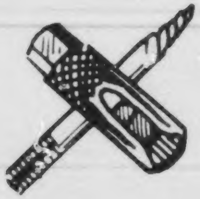
Chain Wrench

Cooling System Service Tools

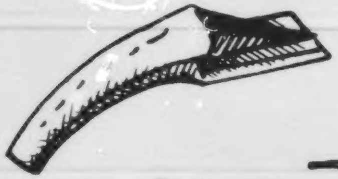

Fan Wrench
Radiator Hose Remover Tool
Antifreeze Tester
Hose Clamp Pliers
Belt Tension Gauge
Radiator
Pressure Tester

Lubrication Service Tools

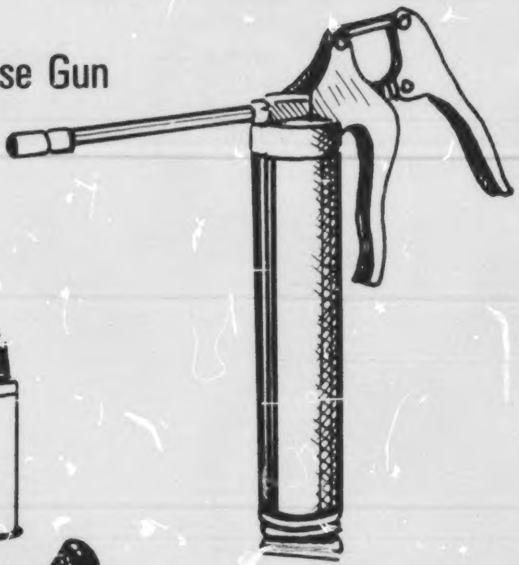
Grease Fitting Tool

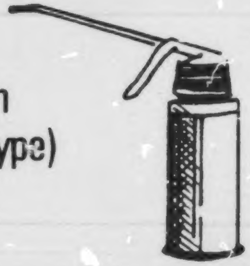


Oil Spout



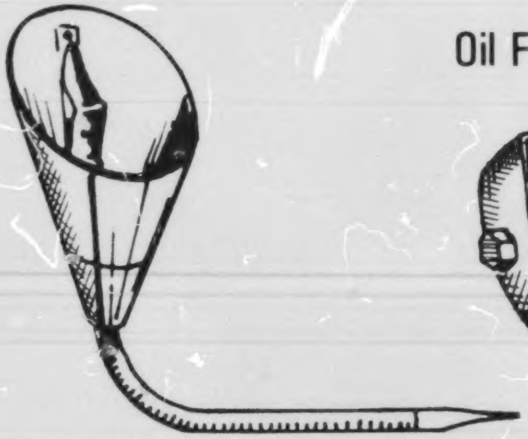
Grease Gun



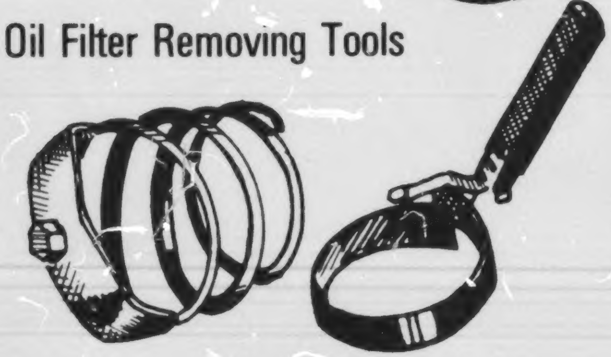


Oil Can
(Trigger type)

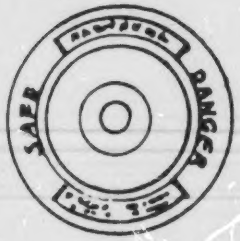
Transmission Filler Funnel



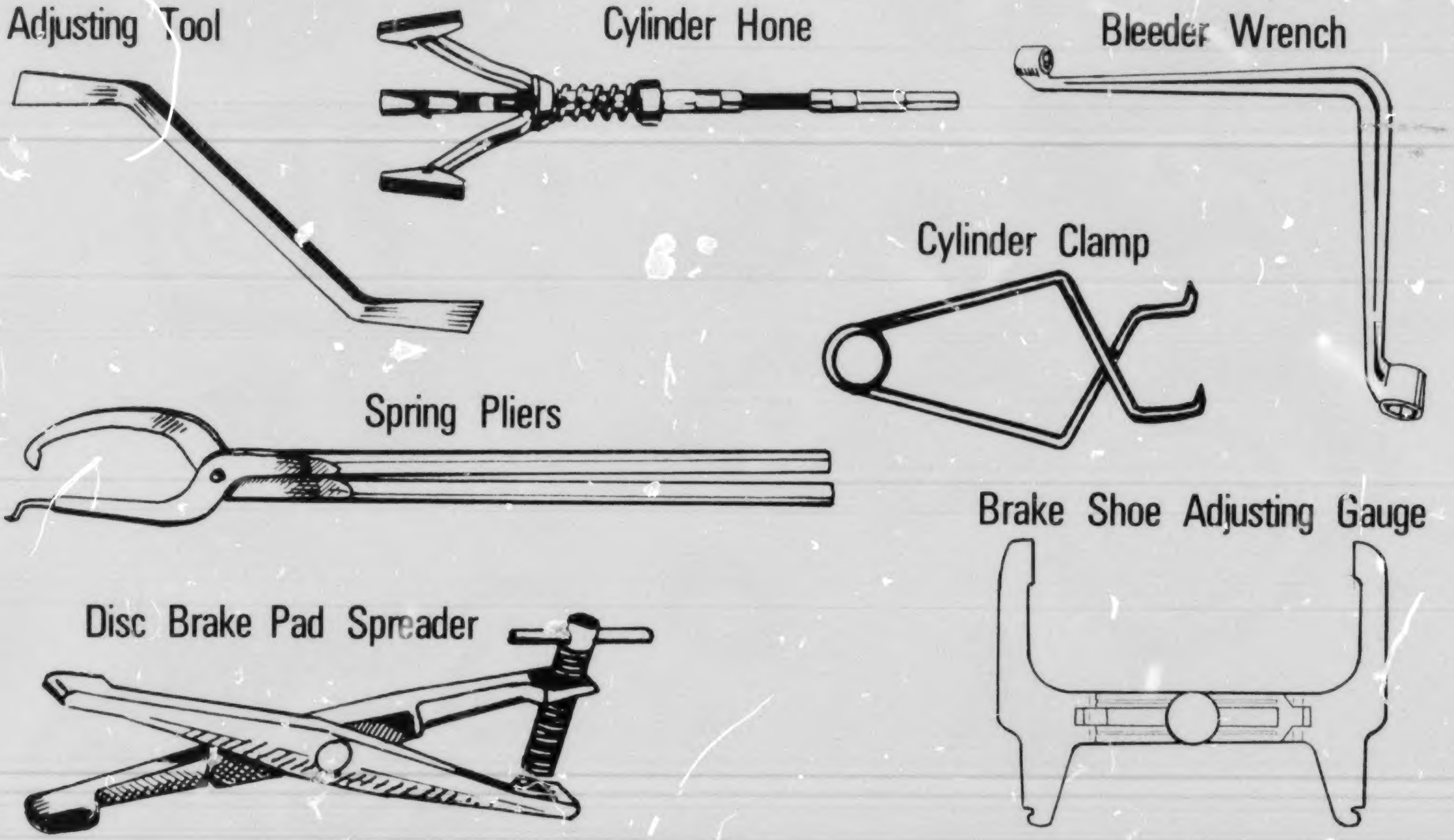
Oil Filter Removing Tools



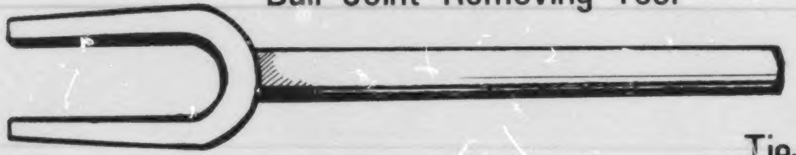
PCV Tester

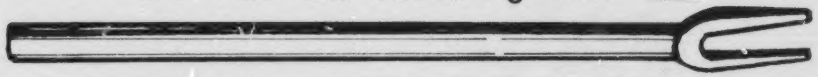


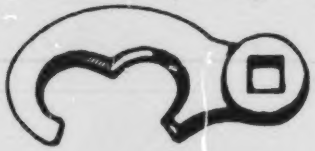
Brake Service Tools

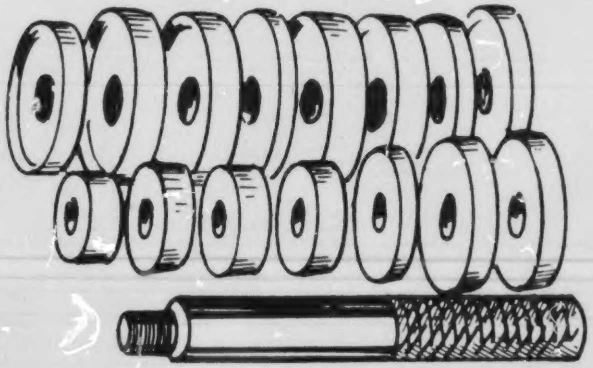

Adjusting Tool
Cylinder Hone
Bleeder Wrench
Cylinder Clamp
Spring Pliers
Brake Shoe Adjusting Gauge
Disc Brake Pad Spreader

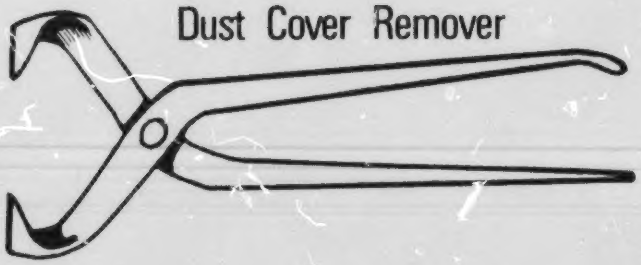
Front-End Service Tools


Ball Joint Removing Tool


Tie–Rod End Removing Tool

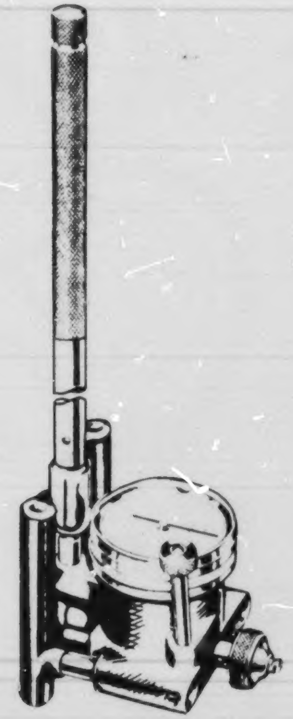

Toe–In Adjusting Wrench


Seal Driver Set

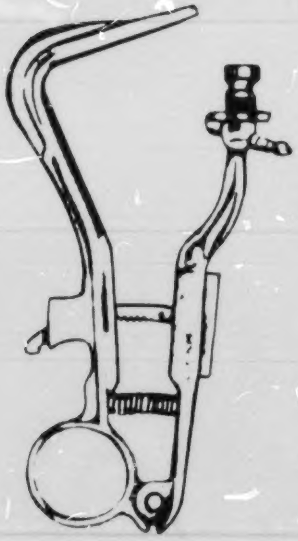

Dust Cover Remover

Engine Repair Tools

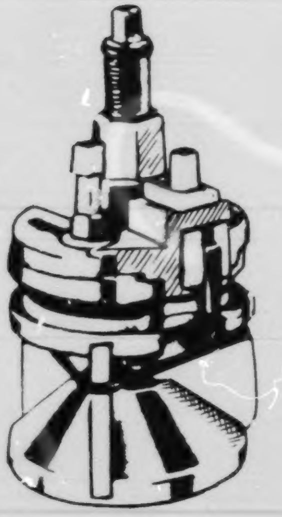
Cylinder Taper Gauge



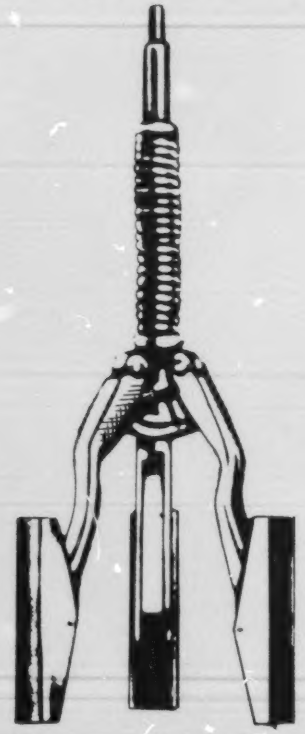
Piston Ring
Groove Cleaner



Ridge Reamer



Cylinder Deglazing Hone



TM 26

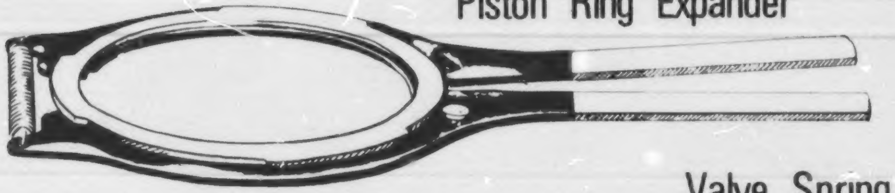
483

489

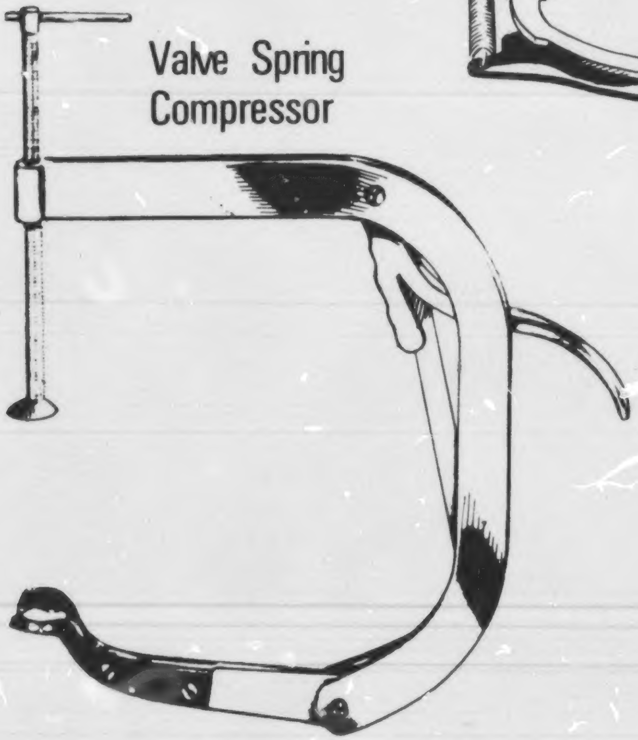
PS-565

Engine Repair Tools

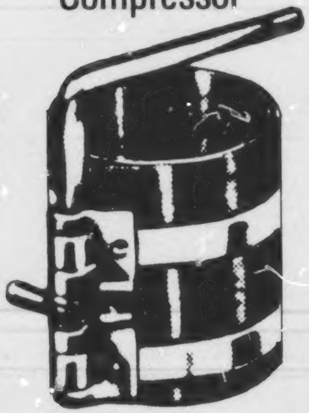
(Continued)



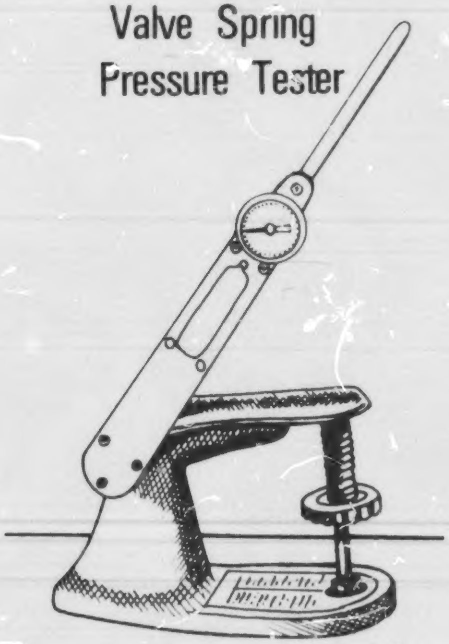
Piston Ring Expander



Valve Spring Compressor

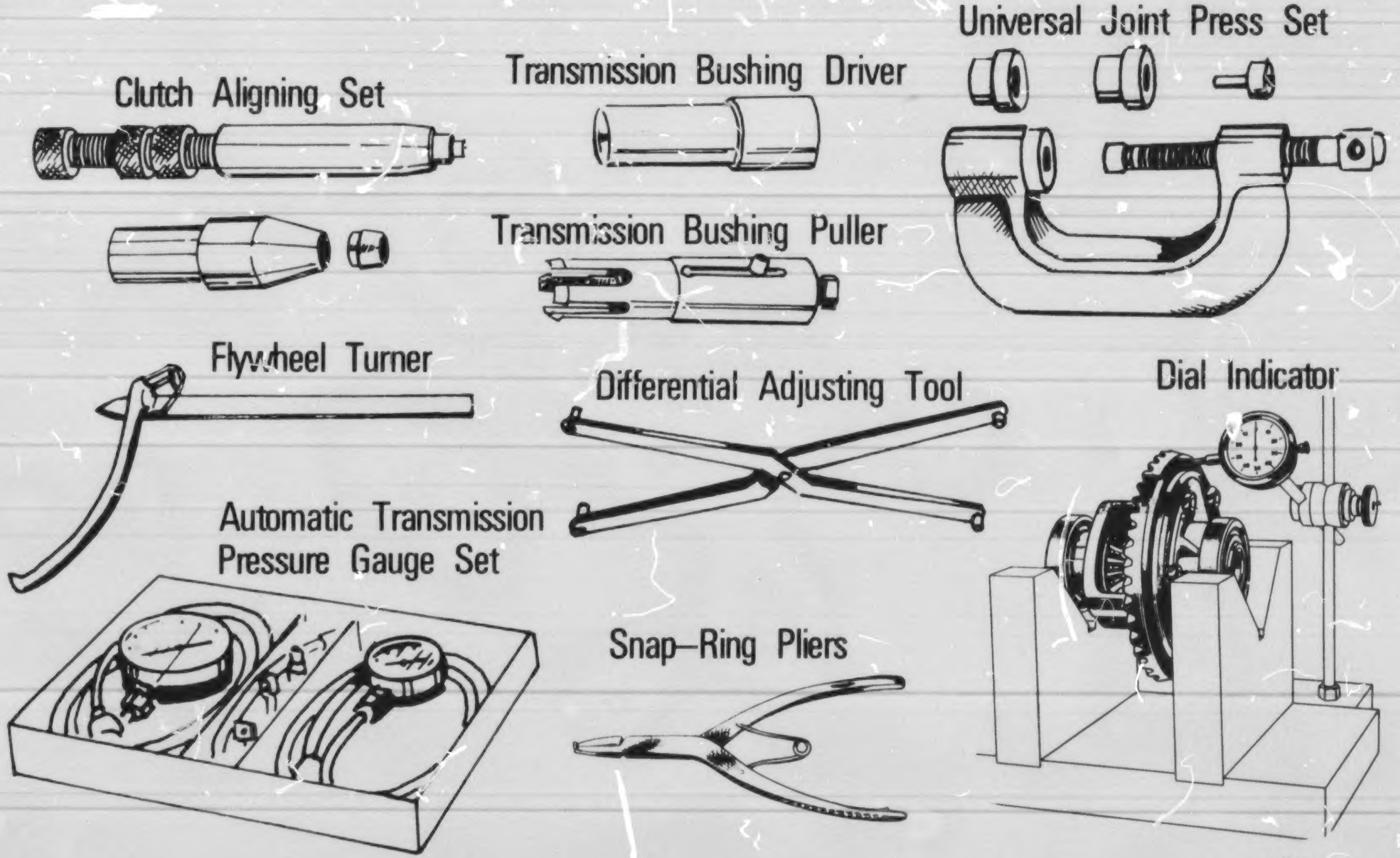


Piston Ring Compressor



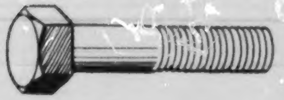
Valve Spring Pressure Tester

Drive Line Tools

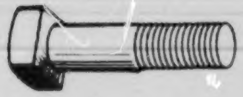

Clutch Aligning Set
Transmission Bushing Driver
Universal Joint Press Set
Transmission Bushing Puller
Flywheel Turner
Differential Adjusting Tool
Dial Indicator
Automatic Transmission Pressure Gauge Set
Snap–Ring Pliers

Bolt Head Styles

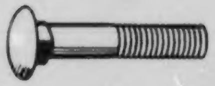
Hex Head Bolt



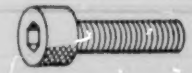
Square Head Cap Screw



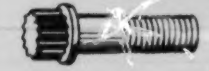
Carriage Bolt



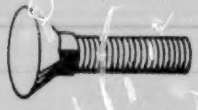
Hex Socket Head Bolt



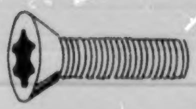
12-Point Head Bolt



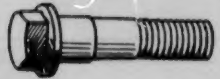
Plow Bolt



Torx Head Bolt

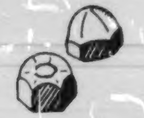


Hex Flange Screw

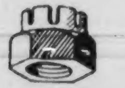


Typical Nuts

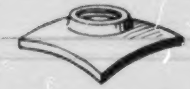
Acorn



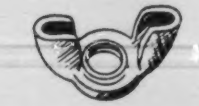
Castle



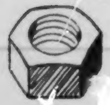
Spring



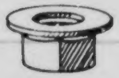
Wing



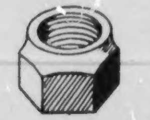
Hex



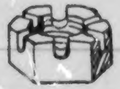
Flanged



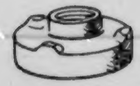
Lock



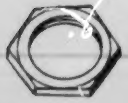
Slotted



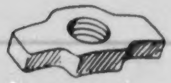
Weld



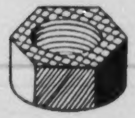
Panel



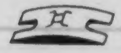
Specialty



Serrated

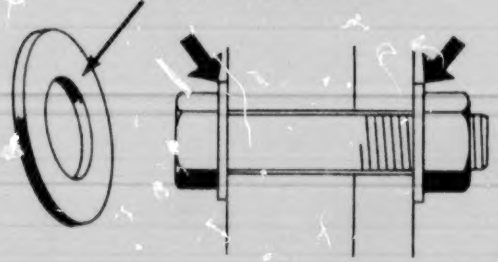


Single Thread

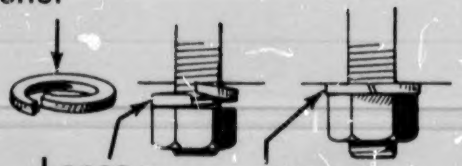


Types of Washers

Flat Washer

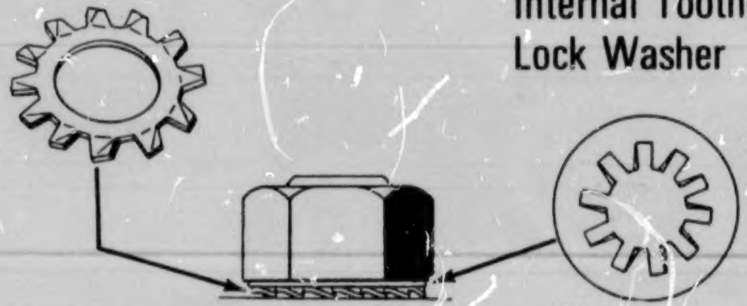


Lock Washer

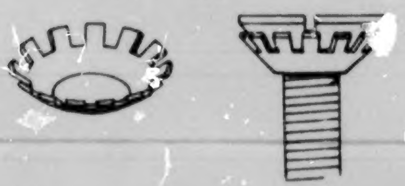

Loose
Tight
(Washer Grips)

External Toothed Lock Washer

Internal Toothed Lock Washer

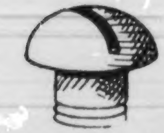


Countersunk External Toothed Washer

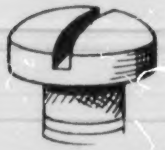


Machine Screw Head Designs

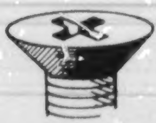
Round



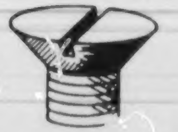
Fillister



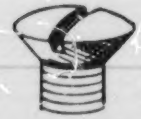
Cross Recessed or Phillips



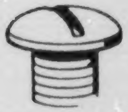
Flat



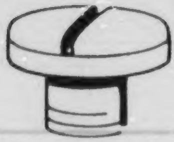
Oval



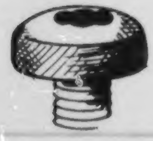
Truss



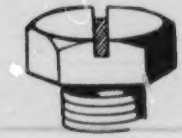
Pan



Clutch

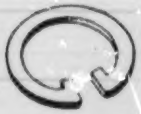


Hex Slotted

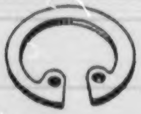


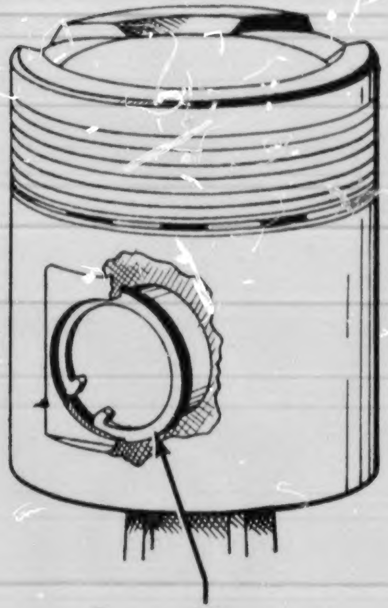
Types of Snap Rings

Internal Prong



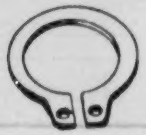
Internal Hole



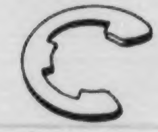


Snap Ring

External Hole

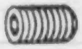


External "E"

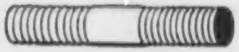


Miscellaneous Fasteners

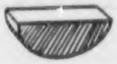
Set Screw



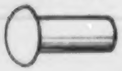
Stud



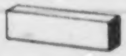
Woodruff Key



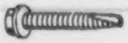
Rivet



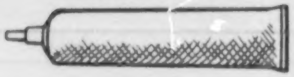
Square Key



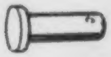
Tapping Screw



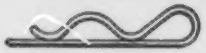
Adhesive



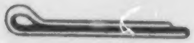
Clevis Pin



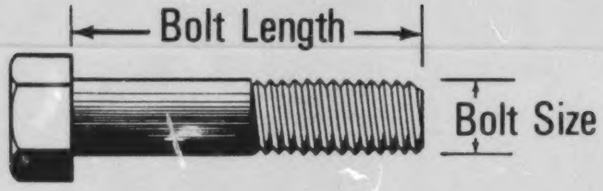
Spring Lock Pin



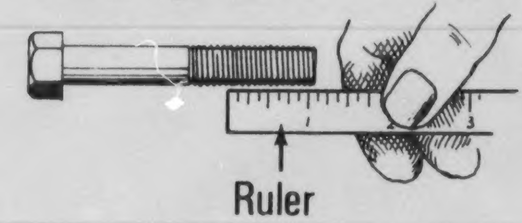
Cotter Pin

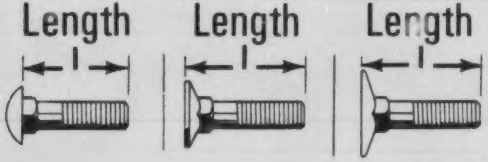


How to Measure Bolts and Threads

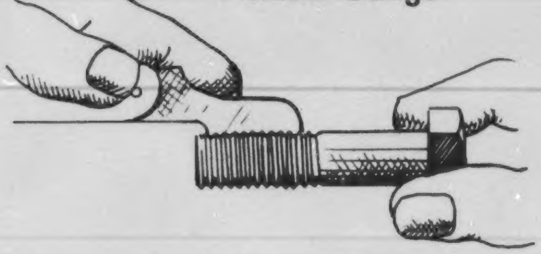

Bolt Length
Bolt Size

Measuring Threads Per Inch

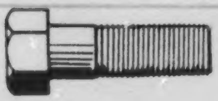



Length
Length
Length

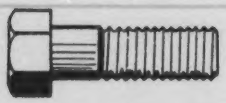
Thread Gauge



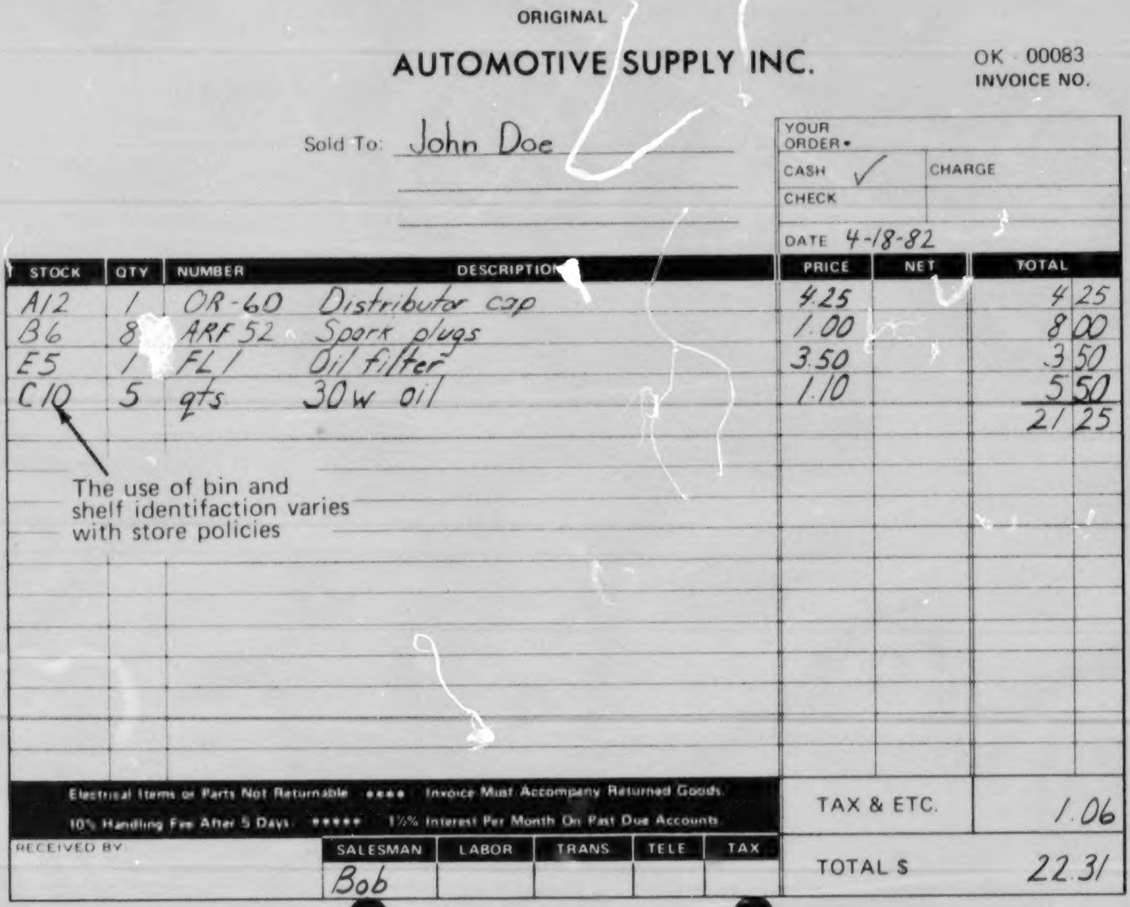
Fine Thread



Coarse Thread



Information Needed on Sales Tickets



ORIGINAL

AUTOMOTIVE SUPPLY INC.

OK - 00083
INVOICE NO.

Sold To: John Doe

YOUR ORDER •

CASH ✓ CHARGE

CHECK

DATE 4-18-82

STOCK	QTY	NUMBER	DESCRIPTION	PRICE	NET	TOTAL
A12	1	OR-60	Distributor cap	4.25		4 25
B6	8	ARF 52	Spark plugs	1.00		8 00
E5	1	FL1	Oil filter	3.50		3 50
C10	5	qts	30w oil	1.10		5 50
						21 25

The use of bin and shelf identifaction varies with store policies

Electrical Items or Parts Not Returnable **** Invoice Must Accompany Returned Goods.
10% Handling Fee After 5 Days ***** 1½% Interest Per Month On Past Due Accounts.

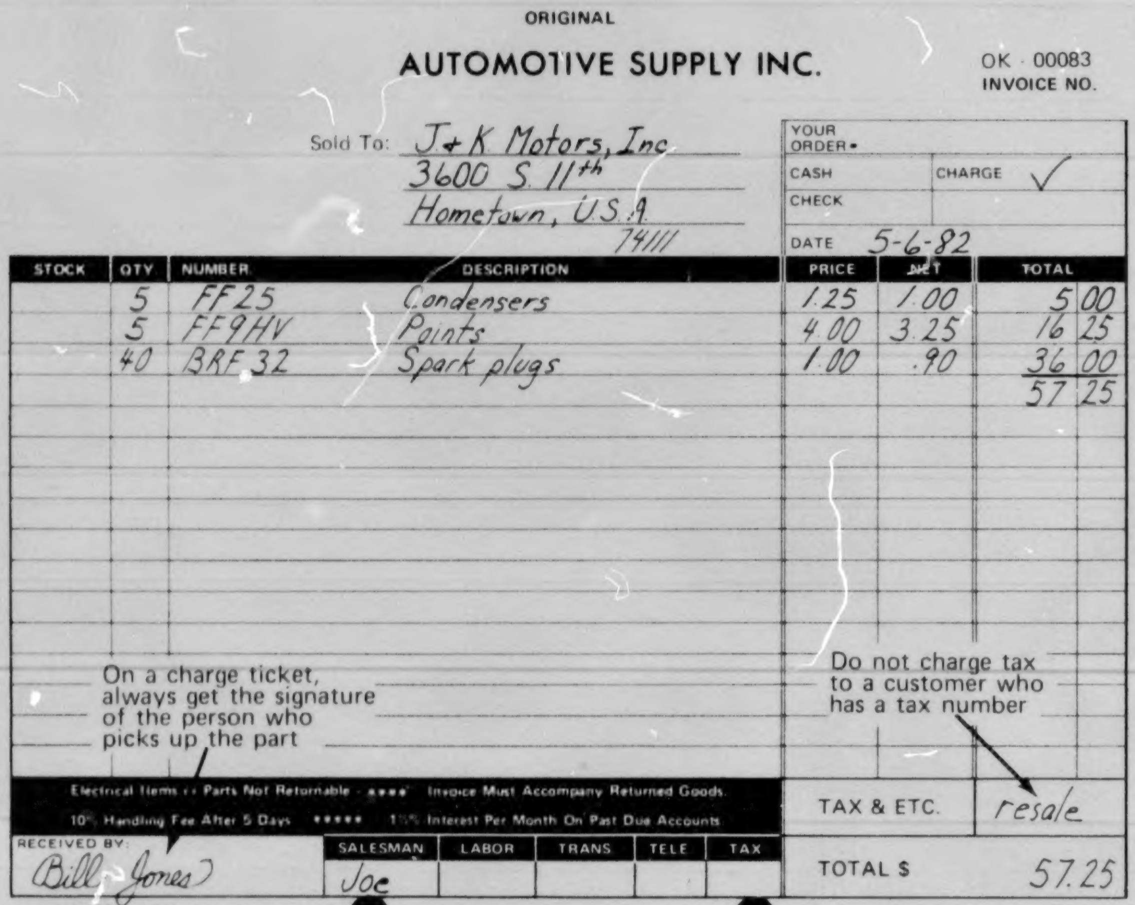
RECEIVED BY	SALESMAN	LABOR	TRANS	TELE	TAX
	Bob				

TAX & ETC. 1.06

TOTAL $ 22.31

Information Needed on Sales Tickets

(Continued)



ORIGINAL

AUTOMOTIVE SUPPLY INC.

OK · 00083
INVOICE NO.

Sold To: J+K Motors, Inc
3600 S. 11th
Hometown, U.S.A.
74111

YOUR ORDER •

CASH

CHARGE ✓

CHECK

DATE 5-6-82

STOCK	QTY	NUMBER	DESCRIPTION	PRICE	NET	TOTAL
	5	FF25	Condensers	1.25	1.00	5 00
	5	FF9HV	Points	4.00	3.25	16 25
	40	BRF32	Spark plugs	1.00	.90	36 00
						57 25

On a charge ticket, always get the signature of the person who picks up the part

Do not charge tax to a customer who has a tax number

Electrical Items [illegible] Parts Not Returnable · **** · Invoice Must Accompany Returned Goods.

10% Handling Fee After 5 Days ***** 1½% Interest Per Month On Past Due Accounts.

RECEIVED BY: Bill Jones

SALESMAN	LABOR	TRANS	TELE	TAX
Joe				

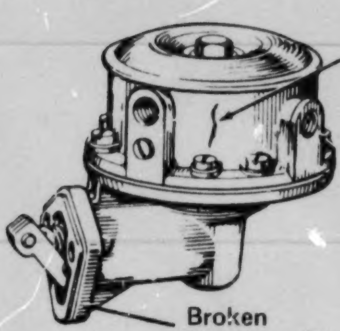
TAX & ETC. resale

TOTAL $ 57.25

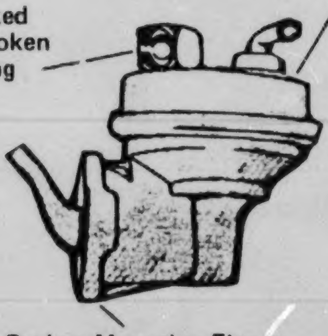
Items to Check for on Cores

Fuel Pumps

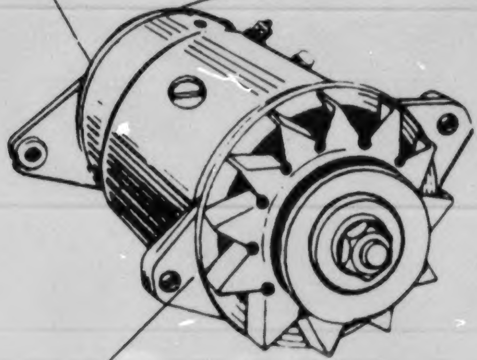
DIE CAST PUMP


Cracked or Broken Castings
Broken Mounting Flange

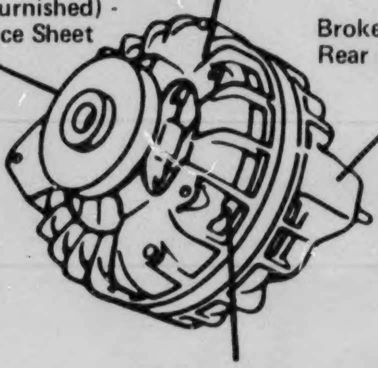
UNITAC PUMP


Bent or Broken Top
Cracked or Broken Fitting
Broken Mounting Flange

Generators


Armature Missing
Commutator End Plate Broken or Missing
Drive End Plate Broken or Missing

Alternators

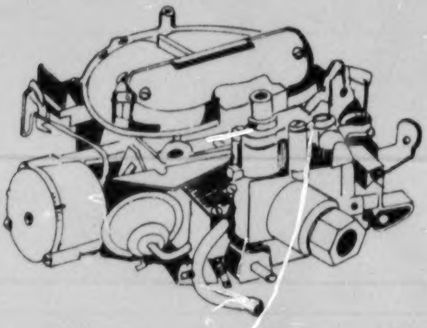

Broken or Missing Front Frame
Missing or Damaged Pulley (If Furnished) - Refer to Price Sheet
Broken or Missing Rear Frame
Missing Rotor
Missing Stator

Items to Check for on Cores

(Continued)

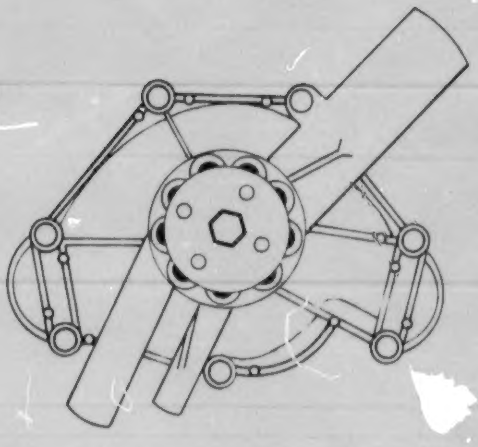
Carburetors

CHARGES FOR BROKEN OR MISSING PARTS WILL BE MADE FOR THE FOLLOWING
(Refer to Carburetor Price Sheet for Specific Charges)



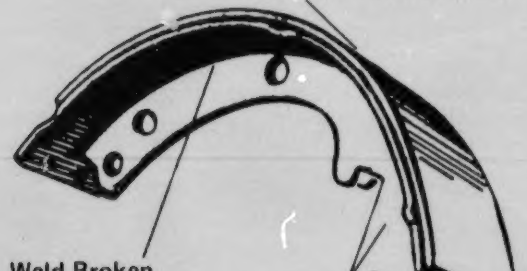
1. Frozen, Cracked or Disassembled Units
2. Burned or Excessively Oxidized
3. Broken Air Horn
4. Body
5. Base
6. Automatic Choke
7. Stripped Threads

Water Pumps



Cracked or Broken Castings
Excessively Pitted Aluminum Castings
Bolt Hole Broken Off

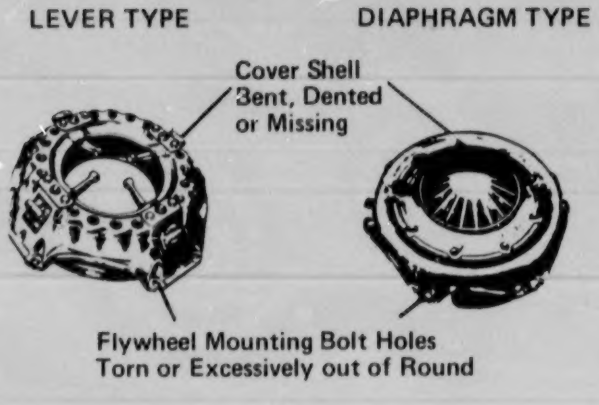
Brake Shoes


Bent or Scored Platform From Drum Contact
Weld Broken or Loose Platform
Rusted, Pitted or Twisted Shoe

Items to Check for on Cores

(Continued)

Pressure Plate


LEVER TYPE
DIAPHRAGM TYPE
Cover Shell Bent, Dented or Missing
Flywheel Mounting Bolt Holes Torn or Excessively out of Round

Clutch Disc

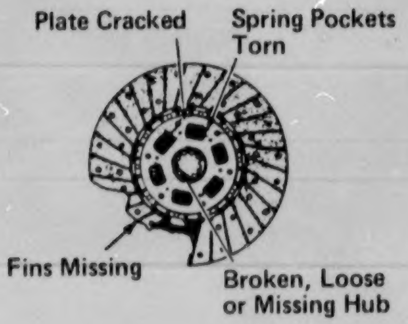
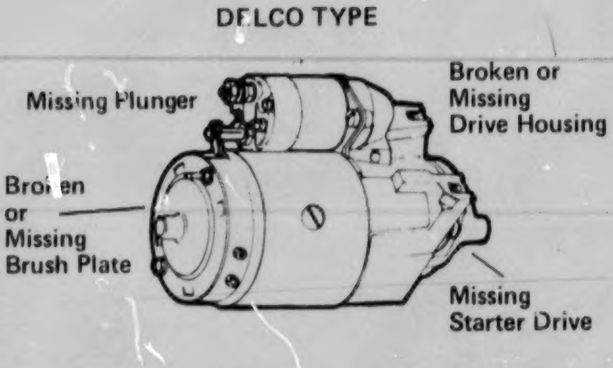
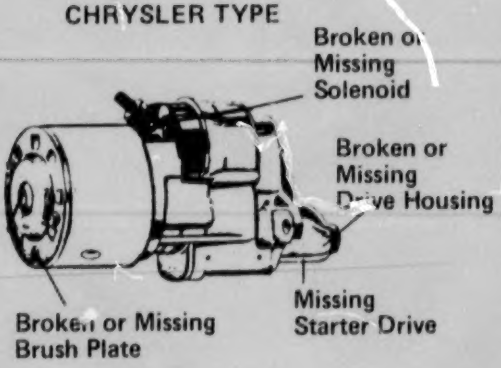
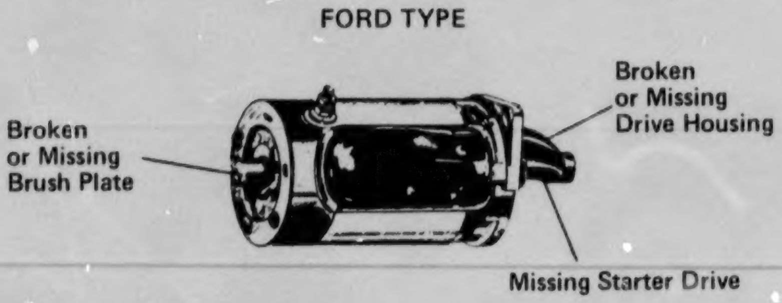


Plate Cracked
Spring Pockets Torn
Fins Missing
Broken, Loose or Missing Hub

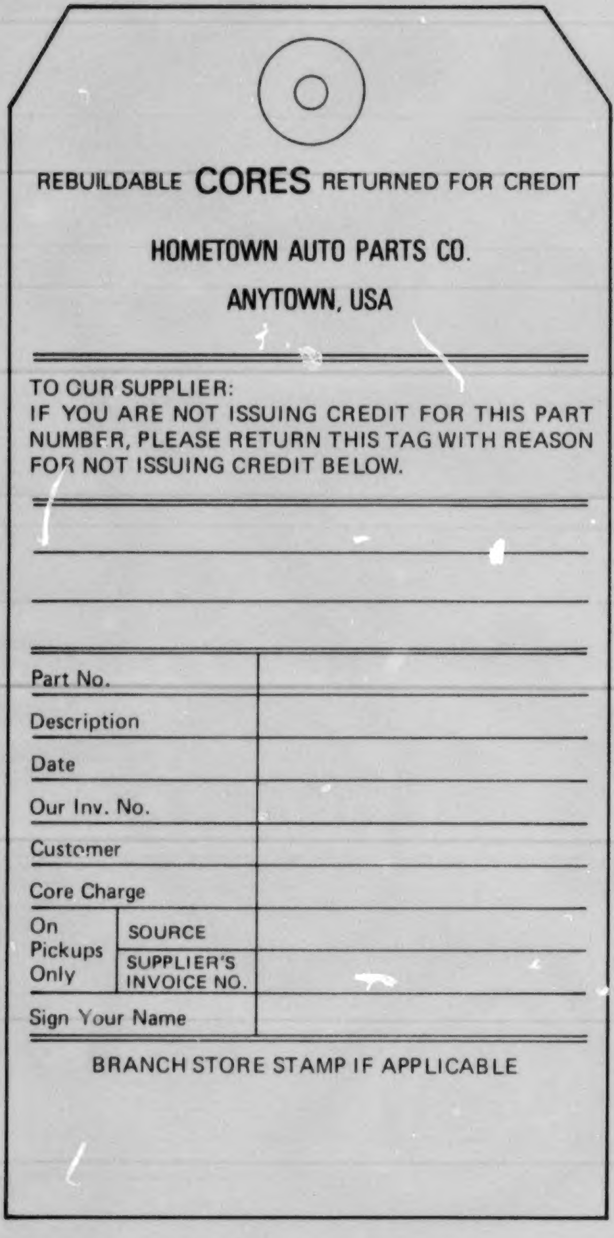
Starters


DELCO TYPE
Missing Plunger
Broken or Missing Drive Housing
Broken or Missing Brush Plate
Missing Starter Drive


CHRYSLER TYPE
Broken or Missing Solenoid
Broken or Missing Drive Housing
Broken or Missing Brush Plate
Missing Starter Drive


FORD TYPE
Broken or Missing Drive Housing
Broken or Missing Brush Plate
Missing Starter Drive

Core Tag



REBUILDABLE **CORES** RETURNED FOR CREDIT

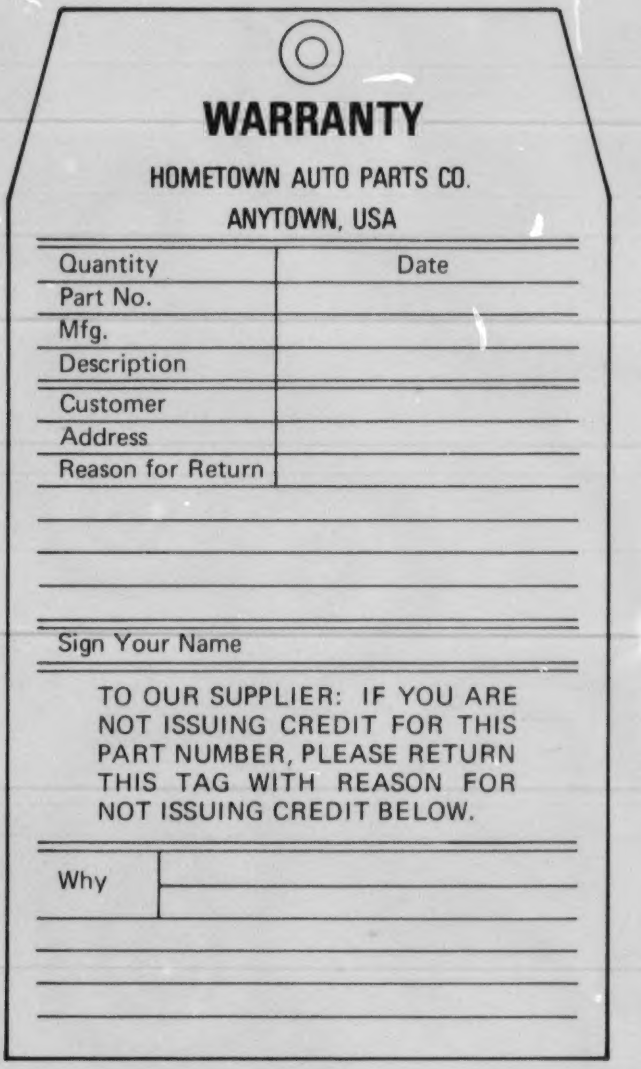
HOMETOWN AUTO PARTS CO.
ANYTOWN, USA

TO OUR SUPPLIER:
IF YOU ARE NOT ISSUING CREDIT FOR THIS PART NUMBER, PLEASE RETURN THIS TAG WITH REASON FOR NOT ISSUING CREDIT BELOW.

Part No.		
Description		
Date		
Our Inv. No.		
Customer		
Core Charge		
On Pickups Only	SOURCE	
	SUPPLIER'S INVOICE NO.	
Sign Your Name		

BRANCH STORE STAMP IF APPLICABLE

Warranty Tag



WARRANTY

HOMETOWN AUTO PARTS CO.
ANYTOWN, USA

Quantity	Date
Part No.	
Mfg.	
Description	
Customer	
Address	
Reason for Return	

Sign Your Name

TO OUR SUPPLIER: IF YOU ARE NOT ISSUING CREDIT FOR THIS PART NUMBER, PLEASE RETURN THIS TAG WITH REASON FOR NOT ISSUING CREDIT BELOW.

Why

Merchandise Return Form

AUTOMOTIVE SUPPLY INC.

DATE

CREDIT NO.

JOBBER & CLASSIFICATION STOCK RETURN

STORE NAME

JOBBER NO.

APPROVED BY

DO NOT RETURN ANY MERCHANDISE FOR CREDIT UNTIL AUTHORIZATION IS MADE BY THE DISTRIBUTION CENTER

CLASS	QUANTITY			LINE NO.	PART NO.	INVOICE NO.	WARRANTY TAG NO.	CODE
	TO KEEP	TO RETURN	ACTUAL SHIPPED					

PS-601

COUNTER SERVICES
UNIT XI

ASSIGNMENT SHEET #1--COMPLETE A SALES TICKET

Use the following information to fill in as much of the sales ticket as you can.

Customer name: Stan Hill, and it is a cash ticket
Date: October 4, 1982
Your name is John.
Parts bought:
- Two headlights (part #6401) price $4.00 each
- One alternator belt (part #35508) price $4.98
- Three cans freon (part #65-1) price $1.25
- Headlights are stocked in bin A-31
- Belt is in bin B-12
- Freon is in bin C-9

Customer is not entitled to any discounts, and pays 5% sales tax.

Sold To: ______________________
____
____

YOUR ORDER #	
CASH	CHARGE
CHECK	
DATE	

STOCK	QTY	NUMBER	DESCRIPTION	PRICE	NET	TOTAL

Electrical Items or Parts Not Returnable **** Invoice Must Accompany Returned Goods
10% Handling Fee After 5 Days ***** 1½% Interest Per Month On Past Due Accounts

TAX & ETC.

RECEIVED BY:

SALESMAN	LABOR	TRANS	TELE	TAX

TOTAL $

COUNTER SERVICES
UNIT XI

ASSIGNMENT SHEET #2--COMPLETE A CREDIT MEMO

Use the following information to fill in as much of the credit memo as you can.

(NOTE: It is the same as filling out a sales ticket, but it is done on a different form.)

Date: September 1, 1982
Jones Chevrolet has an open account and has charged the sale.
They also have a valid tax number.
They want to return a carburetor, part #2261.
List price was $125.00, their jobber price was $90.00 (he had his original sales slip with him).
Jones Chevrolet's address is 100 Main Street, Dallas, Texas, 76200.
The man picking up the part is Bob Jones.
Your name is George.

Question: Would you give this customer back $90 cash?

Sold To: ______________________

YOUR ORDER •	
CASH	CHARGE
CHECK	
DATE	

STOCK	QTY	NUMBER	DESCRIPTION	PRICE	NET	TOTAL

CREDIT MEMO

Electrical Items or Parts Not Returnable **** Invoice Must Accompany Returned Goods
10% Handling Fee After 5 Days ***** 1½% Interest Per Month On Past Due Accounts

TAX & ETC.	
TOTAL $	

RECEIVED BY:	SALESMAN	LABOR	TRANS	TELE	TAX

COUNTER SERVICES
UNIT XI

ANSWERS TO ASSIGNMENT SHEETS

Assignment Sheet #1:

ORIGINAL

AUTOMOTIVE SUPPLY INC.

OK - 00083
INVOICE NO.

Sold To: Stan Hill

YOUR ORDER•

CASH ✓ CHARGE

CHECK

DATE 10-4-82

STOCK	QTY	NUMBER	DESCRIPTION	PRICE	NET	TOTAL
A-31	2	6401	Headlights	4.00		8 00
B-12	1	35508	Alternator belt	4.98		4 98
C-9	3	65-1	Freon	1.25		3 75
						16 73

Electrical Items or Parts Not Returnable **** Invoice Must Accompany Returned Goods

10% Handling Fee After 5 Days ***** 1% Interest Per Month On Past Due Accounts

RECEIVED BY:	SALESMAN	LABOR	TRANS	TELE	TAX
	John				

TAX & ETC. .84

TOTAL $ 17.57

Assignment Sheet #2:

Answer to question: No, because he charged the carburetor when he originally bought it, so you would not give him cash back.

ORIGINAL

AUTOMOTIVE SUPPLY INC.

OK · 00083
INVOICE NO.

Sold To: Jones Chevrolet
100 Main Street
Dallas, Texas 76200

YOUR ORDER •	
CASH	CHARGE ✓
CHECK	
DATE 9-1-82	

STOCK	QTY	NUMBER	DESCRIPTION	PRICE	NET	TOTAL
	1	2261	Carburetor	125.00	90.00	90.00

CREDIT MEMO

Electrical Items or Parts Not Returnable •••• Invoice Must Accompany Returned Goods

10% Handling Fee After 5 Days ••••• 1½% Interest Per Month On Past Due Accounts

TAX & ETC. resale

RECEIVED BY:	SALESMAN	LABOR	TRANS	TELE	TAX
Bob Jones	George				

TOTAL $ 90.00

COUNTER SERVICES
UNIT XI

JOB SHEET #1--MEASURE BATTERY ELECTROLYTE WITH A HYDROMETER

I. Tools and equipment

  A. Hydrometer

  B. Shop towels

  C. Container of clean water

II. Procedure

(CAUTION: Before starting these procedures, review items related to battery safety in UNIT IV.)

  A. Remove vent caps from battery

  B. Insert the hydrometer into the first cell

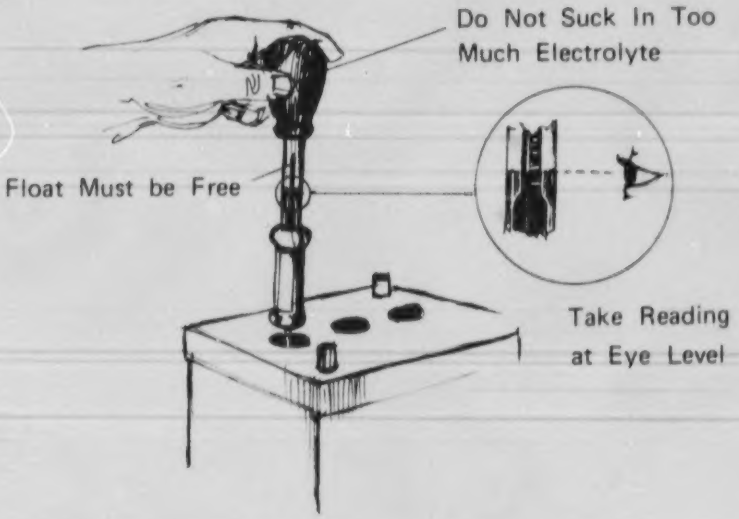
  C. Squeeze the rubber bulb to draw electrolyte into the hydrometer to suspend the float

  (NOTE: If the electrolyte level is too low, add water until electrolyte level is correct, charge for one hour, and recheck.)

  D. Take reading at eye level (Figure 1)

  (NOTE: Make sure the float is not bumping the top of the hydrometer tube or sticking to the side of the tube. Write down reading for each cell.)

FIGURE 1 Hold Tube Vertically


Do Not Suck In Too Much Electrolyte
Float Must be Free
Take Reading at Eye Level

JOB SHEET #1

E. Squeeze bulb to return electrolyte to cell

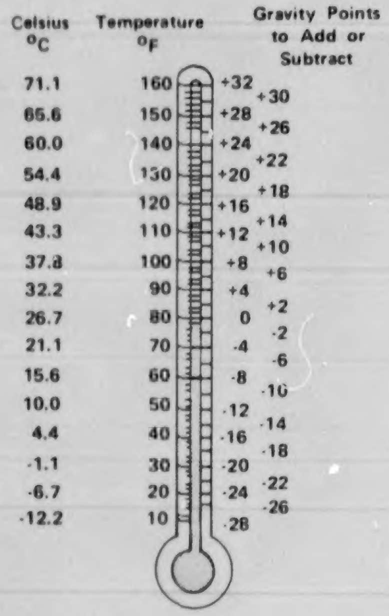
F. Repeat for other cells

G. Adjust the readings for temperature (Figure 2)

   1. Add four gravity points (0.004) to the reading for each 10°F (5.5°C) above 80°F (26.7°C)

   2. Subtract four gravity points (0.004) for each 10°F (5.5°C) below 80°F (26.7°C)

FIGURE 2



Temperature Adjustment Chart

(NOTE: Specific gravity should read from 1.215 to 1.270, corrected for 80°F (26.7°C) electroyte temperature. The variation in readings between cells should be no more than 0.050. If the readings are not within this range, further testing will be required.)

H. Replace vent caps upon completion of test

I. Flush any spilled electrolyte with water and rinse hydrometer after use

COUNTER SERVICES
UNIT XI

JOB SHEET #2--LOAD TEST A BATTERY

I. Tools and equipment

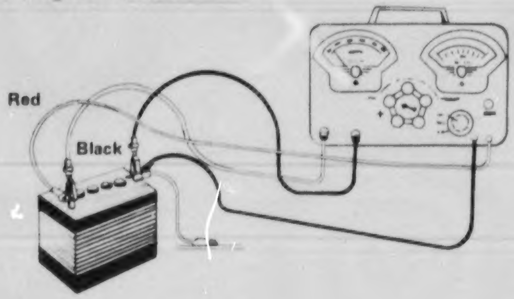
- A. Battery capacity tester
- B. Appropriate conductors

II. Procedure

(CAUTION: Before starting these procedures, review items related to battery safety in UNIT IV.)

A. Connect tester (Figure 1)

FIGURE 1



Battery Capacity Test

B. Tighten rheostat knob to apply a load to the battery

(CAUTION: Do not apply the load to the battery for more than 15 seconds at a time.)

C. Apply load equal to three times the ampere-hour rating or one half the cold cranking rate of battery being tested

(NOTE: Ampere-hour rating or cold cranking rate may be marked on the outside of the battery case; if not, consult manufacturer's specifications for the specific vehicle's requirements.)

D. Read battery voltage at the end of 15 seconds

(NOTE: If voltage drops below 9.6 volts in 15 seconds, the battery may require a 3-minute charge test; consult your instructor.)

E. Loosen rheostat to relieve load at end of 15 seconds

F. Disconnect tester

COUNTER SERVICES
UNIT XI

NAME ______________________________

TEST

1. Match the terms on the right with their correct definitions.

_____a. A ticket which states the date, customer's name, quantity, part number, description, price of items sold, and method of payment

_____b. A ticket used to give credit or refund to a customer when merchandise is returned

_____c. A special reduction made from the list price for certain customers; usually those who buy in large quantities and pay promptly

_____d. Money spent by the firm; usually used in connection with cash register transactions

_____e. A nominal charge for processing an item for return through the normal channels of a manufacturer or supplier

_____f. Suggested retail price

_____g. Cost of an item usually determined by the class of the purchaser; for example, dealer net, distributor net, or jobber net

_____h. An on-going account with good credit for a customer who makes very frequent purchases and is therefore allowed to charge as needed and pay in one lump sum at the end of each month

_____i. A formal request from the buyer to the seller which specifies the conditions of sale and delivery

_____j. A purchase order regularly issued by a wholesaler to bring stock up to the desired level

_____k. Used item accepted in exchange; it is either rebuilt or reconditioned so it can be resold

_____l. A guarantee from reputable manufacturers to the seller that their product will perform to specifications for a certain use period, usually 90 days

1. Paid-out
2. List price
3. Sales ticket or invoice
4. Core
5. Warranty
6. Discount
7. Net price
8. Credit memo
9. Handling charge
10. Purchase order
11. Open account
12. Bolt
13. Stud
14. Stock order
15. SAE
16. Vent caps
17. Tap
18. Battery electrolyte
19. Fastener
20. Screw
21. Battery cell
22. Positive post
23. Die
24. Negative post

______ m. Solution of water and sulphuric acid

______ n. Plates of two different materials immersed in an electrolyte solution

______ o. Caps which close the opening in each battery cell and provide a vent to allow gases to escape

______ p. Larger of the two battery posts; usually marked with a + or "POS"

______ q. Smaller of the two battery posts; usually marked with a - or "NEG"

______ r. Metal rod or pin for fastening objects together; has a head at one end, a screw thread at the other end, and is secured by a nut

______ s. Pointed and headed cylindrical fastener that is threaded and designed for insertion into material by rotating

______ t. Device used to secure or hold together separate items

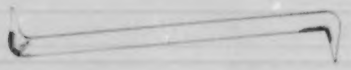
______ u. Tool for forming an internal screw thread

______ v. Internally threaded screw cutting tool used for forming external screw threads

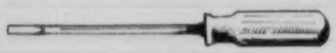
______ w. Steel rod with threads on both ends; is screwed permanently into a fixed part at one end and receives a nut on the exposed end

______ x. Society of Automotive Engineers

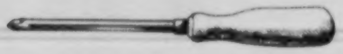
2. Identify the following tools:



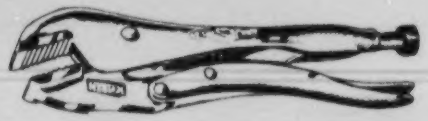
a. ______________________



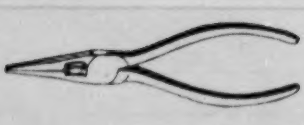
b. ______________________



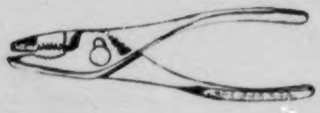
c. ______________________



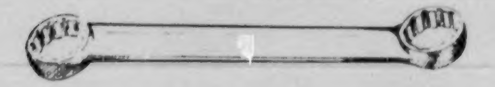
d. ______________________



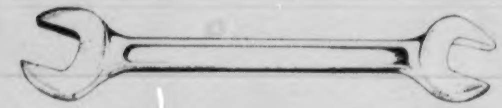
e. ______________________



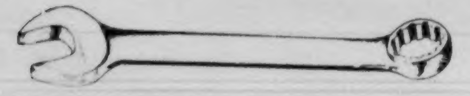
f. ______________________



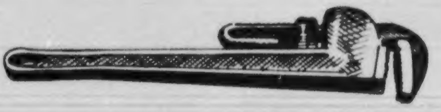
g. ______________________



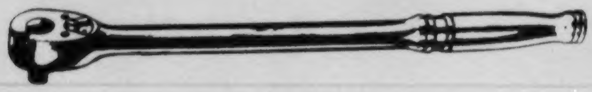
h. ______________________



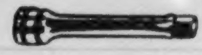
i. ______________________



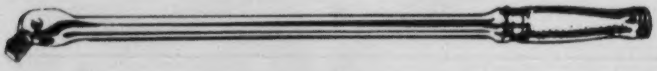
j. ______________________



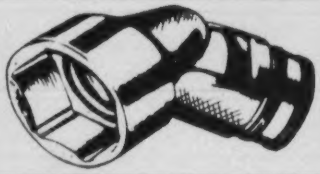
k. ______________________



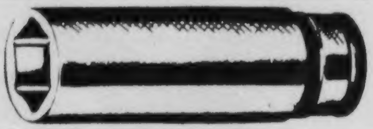
l. ______________________



m. ______________________



n. ______________________



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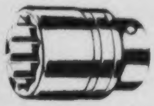

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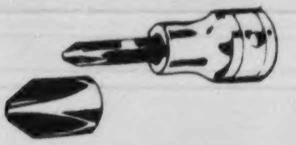

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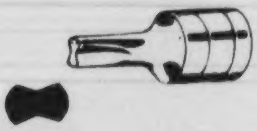

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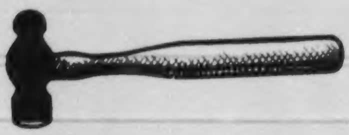

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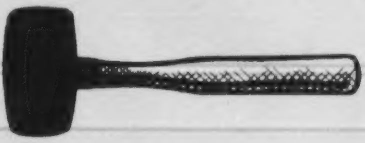

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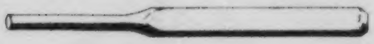

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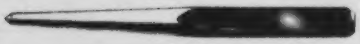

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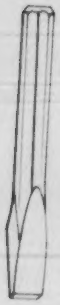
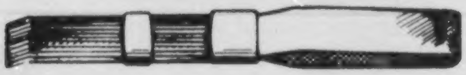


w. ____________________

x. ____________________

y. ____________________



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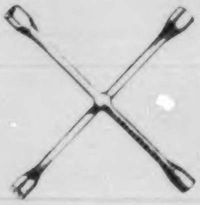

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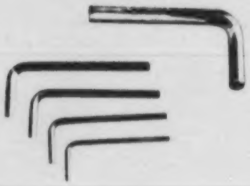

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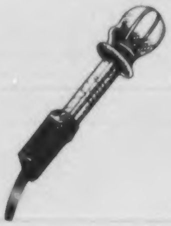

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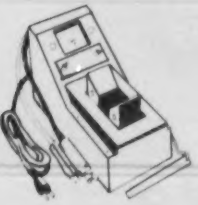

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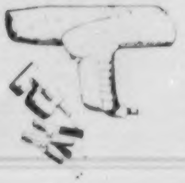

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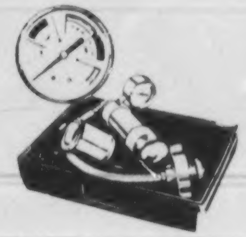

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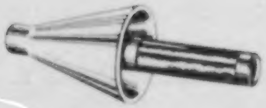

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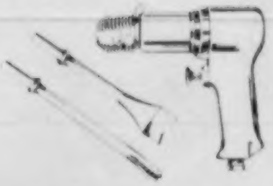
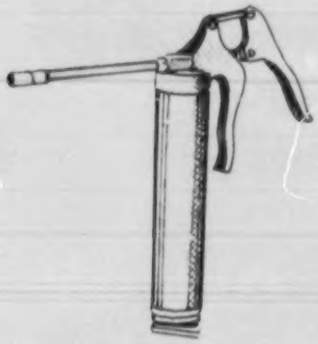


hh. ______________________



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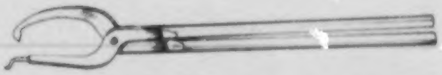

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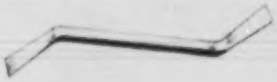
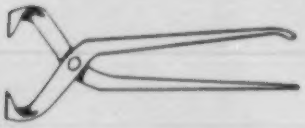


kk. ______________________



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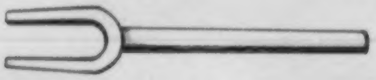

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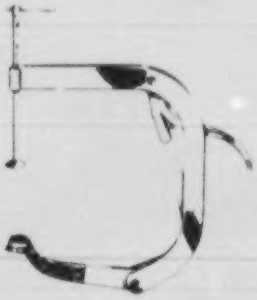

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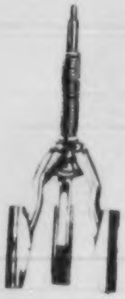

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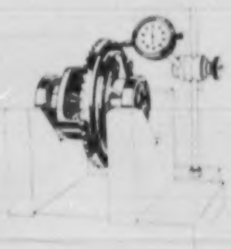

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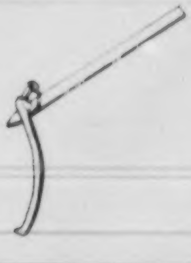
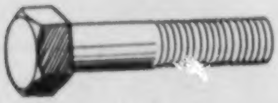
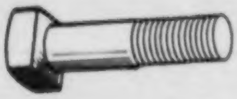


qq. ______________________

3. Identify the following fasteners.



a. ____________________



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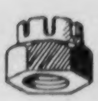

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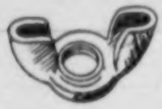

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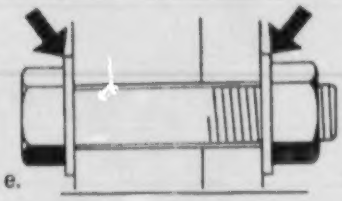
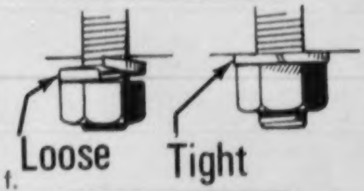


e. ____________________



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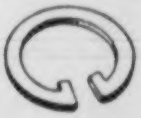

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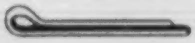
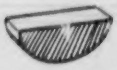
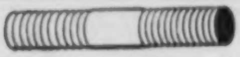


h. ____________________



i. ____________________



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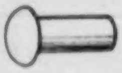

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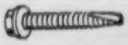


l. ____________________

4. Match bolt and thread dimensions on the right with the techniques for their measurements.

_____a. Determined by measuring the diameter of the thread end

_____b. Determined by measuring the distance from bottom of the head to the end of the threads

_____c. Determined by measuring with a ruler or thread gauge the number of threads per inch

1. Number of threads per inch
2. Size of bolt
3. Length of bolt

5. List eight items needed to write up a sales ticket or invoice.

a. ____

b. ____

c. ____

d. ____

e. ____

f. ______________________________

g. ______________________________

h. ______________________________

6. Select true statements concerning handling exchange items and cores by placing an "X" in the appropriate blanks.

_____a. Parts houses often sell rebuilt parts that are more expensive than new parts

_____b. When a customer buys a rebuilt unit he is allowed to trade in his core if it is complete

_____c. Cores must be inspected for identification

_____d. If a core has missing parts, it can still be taken in to be rebuilt

_____e. When you take in a core you should tag it properly and put it with other cores to be picked up

7. Select true statements concerning handling defective items by placing an "X" in the appropriate blanks.

_____a. A warranty is always given in writing

_____b. Notice of written consumer warranty information should be posted within the customer's view

_____c. It is not important to get all the facts on a faulty part

_____d. It is important to do paper work on defective items as soon as possible

8. Arrange in order the correct way to accept "new" returned merchandise for credit by placing the correct sequence number in the appropriate blank.

_____a. Complete a "paid out" slip to show that the refund was made

_____b. If parts are complete and in good condition, complete a cash refund ticket or credit memo

_____c. Customer must have the original sales slip to determine if the part was purchased at that particular store and the price of the item

_____d. Inspect the returned goods to make sure they are in the right box and no parts are missing

_____e. Return items to stock

_____f. Return amount of refund to customer

9. Arrange in order the procedure used in filling a battery with electrolyte.

    _____ a. After cells are filled, tilt battery from side to side to release air bubbles

    _____ b. Check battery case for leakage to make sure that no damage has occurred in handling

    _____ c. Install vent caps supplied with battery

    _____ d. Fill each cell with battery electrolyte evenly to the bottom of the vent wells observing handling precautions listed on electrolyte cartons

    _____ e. Recheck levels and add acid as needed

10. Complete a sales ticket.

11. Complete a credit memo.

12. Demonstrate the ability to:

    a. Measure battery electrolyte with a hydrometer.

    b. Load test a battery.

COUNTER SERVICES
UNIT XI

ANSWERS TO TEST

1. a. 3
   b. 8
   c. 6
   d. 1
   e. 9
   f. 2
   g. 7
   h. 11
   i. 10
   j. 14
   k. 4
   l. 5
   m. 18
   n. 21
   o. 16
   p. 22
   q. 24
   r. 12
   s. 20
   t. 19
   [illegible] 17
   [illegible] 23
   w. 13
   x. 15

2. a. Offset screwdriver
   b. Standard screwdriver
   c. Phillips screwdriver
   d. Vise grip or lock grip pliers
   e. Needle nose pliers
   f. Slip joint pliers
   g. Box end wrench
   h. Open end wrench
   i. Combination end wrench
   j. Pipe wrench
   k. Ratchet handle
   l. Extension
   m. Break over handle
   n. Universal socket
   o. Deep well (6 point) socket
   p. Standard (12 point) socket
   q. Phillips socket
   r. Clutch head socket
   s. Ball-peen hammer
   t. Rubber mallet
   u. Drift punch
   v. Center punch
   w. Cold chisel
   x. Flat file
   y. Round file
   z. Carbon scraper
   aa. Lug wrench
   bb. Allen wrench set
   cc. Battery hydrometer
   dd. Growler
   ee. Timing light
   ff. Radiator pressure tester
   gg. Straightening cone
   hh. Power chisel
   ii. Grease gun
   jj. Brake spring pliers
   kk. Brake adjusting tool
   ll. Dust cover remover
   mm. Ball joint removing tool
   nn. Valve spring compressor
   oo. Cylinder deglazing hone
   pp. Dial indicator
   qq. Flywheel turner

3. a. Hex head bolt
   b. Cap screw
   c. Castle nut
   d. Wing nut
   e. Flat washer
   f. Lock washer
   g. Internal prong snap ring
   h. Cotter pin
   i. Woodruff key
   j. Stud
   k. Rivet
   l. Tapping screw

4. a. 2
   b. 3
   c. 1

5. Any eight of the following:

   a. Who is purchasing item?
      1) Customer for work on own vehicle
      2) Dealership or garage
   b. Check box indicating how ticket is to be paid
      1) Cash
      2) Check
      3) Charge card
      4) Open account charge
      5) Write P.O.# if available
   c. Date of purchase
   d. Quantity of items purchased
   e. Part number
   f. Name of manufacturer and article
   g. List price
   h. Net price (if appropriate)
   i. Total price of all parts
   j. Core charge or any other adjustments
   k. Sales tax if applicable
   l. Sign or initial the invoice
   m. Stamp all copies of invoice "cash" or "charge"
   n. Have customer sign invoice if it is a charge sale

6. b, c, e

7. b, d

8. a. 5
   b. 3
   c. 1
   d. 2
   e. 6
   f. 4

9. a. 2
   b. 5
   c. 4
   d. 1
   e. 3

10. Evaluated to the satisfaction of the instructor

11. Evaluated to the satisfaction of the instructor

12. Evaluated to the satisfaction of the instructor

RELATED COUNTER SKILLS
UNIT XII

UNIT OBJECTIVE

After completion of this unit, the student should be able to figure sales tax, handle money efficiently, and identify certain office machines commonly used in a parts house or dealership. This knowledge will be evidenced by correctly performing the procedures outlined in the assignment and job sheets and by scoring 85 percent on the unit test.

SPECIFIC OBJECTIVES

After completion of this unit, the student should be able to:

1. Match terms concerning related counter skills with their correct definitions.
2. Select true statements concerning the procedure for accepting checks.
3. Select true statements concerning the procedure for accepting credit cards.
4. Complete a list of special precautions for handling money orders.
5. Complete a list of special precautions for handling travelers checks.
6. Identify office machines commonly used in a parts house.
7. Count change.
8. Figure sales tax.
9. Accept checks.
10. Demonstrate the ability to operate a credit card machine.

RELATED COUNTER SKILLS
UNIT XII

SUGGESTED ACTIVITIES

I. Provide student with objective sheet.

II. Provide student with informaton, assignment, and job sheets.

III. Make transparencies.

IV. Discuss unit and specific objectives.

V. Discuss information and assignment sheets.

VI. Discuss and demonstrate procedures outlined in the job sheet.

VII. Pass out play money and let students practice making change.

VIII. Provide calculators, ten-key machines, cash registers, or whatever is available for the student to practice using.

IX. Give test.

INSTRUCTIONAL MATERIALS

I. Included in this unit:

- A. Objective sheet
- B. Information sheet
- C. Transparency masters
    - 1. TM 1--Office Machines Commonly Used in a Parts House
    - 2. TM 2--Office Machines Commonly Used in a Parts House (Continued)
    - 3. TM 3--Sample Cash Drawer Layout
- D. Assignment sheets
    - 1. Assignment Sheet #1--Count Change
    - 2. Assignment Sheet #2--Figure Sales Tax
    - 3. Assignment Sheet #3--Accept Checks
- E. Answers to assignment sheets
- F. Job Sheet #1--Operate a Credit Card Machine
- G. Test
- H. Answers to test

II. References:

A. *Automotive Wholesaler Counterman's Handbook*. Chicago, IL: Automotive Service Industry Association, 1977.

B. Stull, William. *Marketing Math*. Cincinnati, OH: South-Western Publishing Co., 1979.

C. Sumpter, Tom. *Basic Auto Parts Training*. Fairview, OR: 1980.

D. Nelson, Frank W. *Distibutive Education II*. Stillwater, OK 74074: Curriculum and Instructional Materials Center, Oklahoma State Department of Vocational and Technical Education, 1976.

RELATED COUNTER SKILLS
UNIT XII

INFORMATION SHEET

I. Terms and definitions

A. Trade discount--A reduction offered to customers who will use a particular item for resale or to make repairs

(NOTE: A trade discount may be given in a lump sum, like 40% off or it may be in a series of discounts like less 25%, less 10%.)

Example:

Lump sum		Series	
Parts total	$1,000.00	Parts total	$1,000.00
Less 40%	400.00	Less 25%	250.00
Customer owes	$ 600.00		750.00
		Less 10%	75.00
		Customer owes	$ 675.00

B. Cash discount--A discount given for the immediate or prompt payment of a bill

C. Quantity discount--A reduction given to encourage customers to buy in larger quantities

D. Net 30--The invoice must be paid not later than 30 days from the date of the invoice

(NOTE: If it is not paid within 30 days it may be subject to an interest charge.)

E. E.O.M.(end of month)--Indicates that the terms of payment are computed from the end of the month in which the purchase is made

F. Post-dating--Dating a check for a date later than when the check is written

(NOTE: Check with manager before accepting a post-dated check.)

G. Endorsement--Signature placed on the back of a check by the person cashing it

H. Money order--Order issued by a post office, bank, or telegraph office for payment of money at another office

I. Traveler's check--Check guaranteed by deposits at the bank which issues the check; may be replaced if stolen; has to be signed at the bank and again in front of the person who cashes it

J. Extending prices--Showing the list price, net or customer's price, the customer's price times the quantity sold, the subtotal of items purchased, tax, and the invoice total

INFORMATION SHEET

K. Mark-up--Difference between cost of an item and retail price

L. Touch method--Operating office machines using specific finger positions for faster speed, rhythm, and accuracy

M. Multiple pricing--Pricing in terms of quantities of more than one unit

Example: Customer may purchase one can for 25¢, or with multiple pricing, five cans for $1.00.

II. Procedure for accepting checks

A. Notice the date on the check

1. Post-dated checks may not be cashed until that date arrives

2. Many businesses will not accept checks over thirty days old

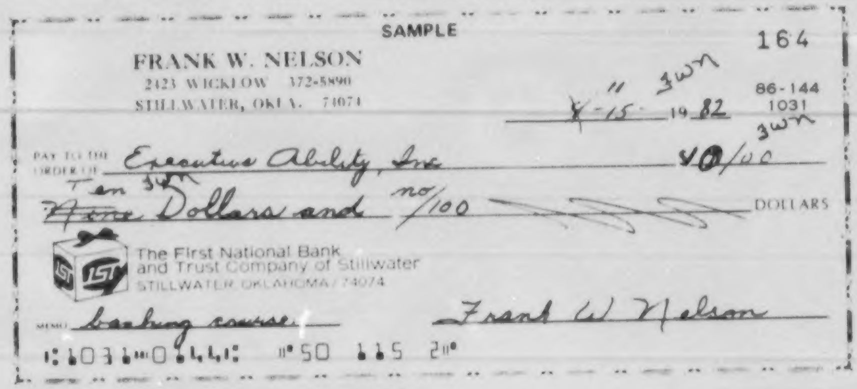
(NOTE: When a check is in question for any reason, check with the manager.)

B. Notice if the amount is written clearly in numbers and in words--if the amount written in words is different from the amount written in numbers, the bank will cash the amount written in words

(NOTE: Not being able to read a person's handwriting is a problem, but it is only an error if it appears to be done on purpose.)

C. Have the customer initial any corrections on the dates or amounts

Example:



SAMPLE

164

FRANK W. NELSON
2123 WICKLOW 372-5890
STILLWATER, OKLA. 74074

11 JWN
~~X~~-15- 19 82

86-144
1031

JWN

PAY TO THE ORDER OF Executive Ability, Inc $10/00

Ten JWN
~~Nine~~ Dollars and no/100 DOLLARS

The First National Bank
and Trust Company of Stillwater
STILLWATER OKLAHOMA / 74074

MEMO banking course

Frank W Nelson

:1031"0144: "50 115 2"

INFORMATION SHEET

D. Write in customer's address if none is shown or if only a post office box number is printed on the check face

E. Observe store rules for getting checks approved, limits on the amount of the check, and on accepting two-party, out-of-town, or company payroll checks

F. Ask for proper identification courteously

(NOTE: Some businesses require more than one form of identification or a particular kind of identification; some may require that the driver's license number be written on the check, that a picture be taken of the check signer, or that a thumb print be placed on the back of the check; in some cases, it may be necessary to call the bank to verify a check.)

G. Examine signature on check

1. Make sure the signature on the identification matches the signature on the check
2. Make sure the signature is the same as the name printed on the check

H. Do not accept checks which are written in pencil

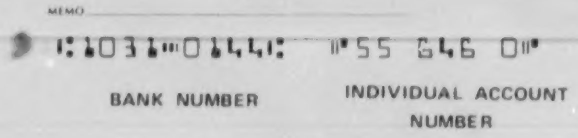
I. Do not accept checks marked "For Deposit Only"

(NOTE: These checks may only be deposited in the bank.)

J. Do not accept company checks with the company name typed on the face of the check rather than printed on the face of the check

K. Do not accept checks without an account number or with altered account numbers

Example:



L. Verify with your supervisor all questionable checks

III. Procedure for accepting credit cards

(NOTE: Stores using computer terminals can authorize credit cards by just punching in the credit card number and amount.)

A. Make sure the card is one your business accepts

INFORMATION SHEET

B. Notice the expiration date

(NOTE: Some cards print the date the card was issued instead of the expiration date; therefore, it is important to know for what period of time the cards are issued.)

C. Make sure the signature on the receipt matches the signature on the card

(NOTE: Have the customer sign the credit card and compare the signature with another form of identification if the credit card has not already been signed.)

D. Check the credit card number with the warning list of bad, lost, or stolen cards

(NOTE: This can be done easily by matching the last three numbers on the list and the card; the numbers on the list are in order.)

E. Contact the credit card company for authorization if any suspicion arises

Example: Customer who will not sign the receipt because of an injured arm

F. Hold the card, stall the customer, and contact the manager if you discover a stolen card

(NOTE: If the customer leaves, remember to get a good description.)

G. Write in credit card numbers which do not print clearly when the card is put through the machine

IV. Special precautions for handling money orders

A. Do not accept checks in payment for money orders

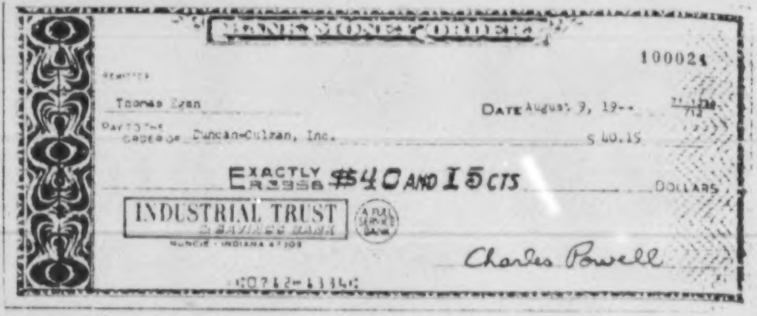
(NOTE: Money orders are made to send through the mail; if the purchaser has a valid checking account, he does not need a money order because he can send a check in the mail; however, there may be a few exceptions where a check may not be accepted as legal payment.)

B. Do not cash if the amount has been altered, erased, or if the amount is in excess of the printed limit

(NOTE: Money orders usually are not written for over $100.)

C. Notice the dates and signatures as carefully as if it were a regular check

Example:



BANK MONEY ORDER

Thomas Ryan

DATE August 9, 19--

PAY TO THE ORDER OF Duncan-Culzan, Inc. $ 40.15

EXACTLY $40 AND 15 CTS DOLLARS

INDUSTRIAL TRUST & SAVINGS BANK
MUNCIE · INDIANA 47305

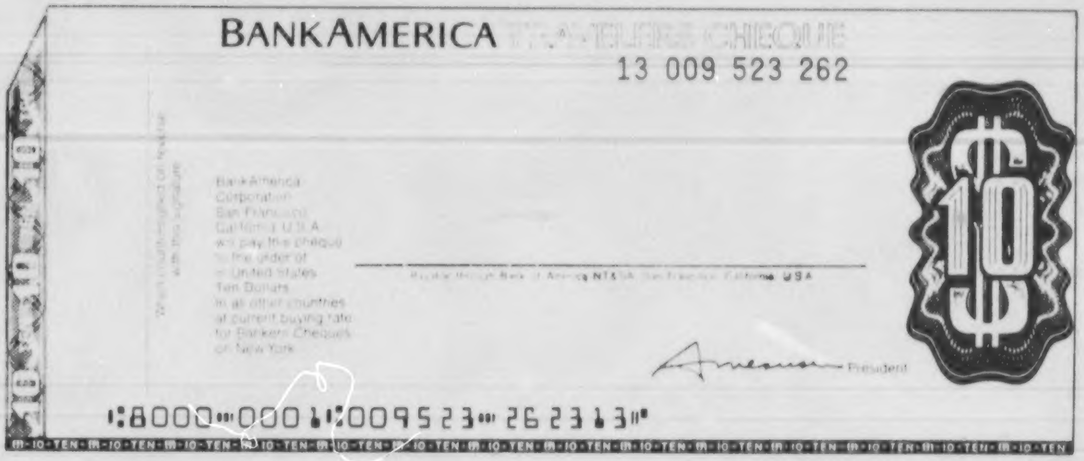
Charles Powell

INFORMATION SHEET

V. Special precautions for handling travelers checks

- A. Have customer sign check in the presence of the person cashing it
- B. Compare the customer's signature with the signature on the front of the check made at the time the checks were purchased at the bank
- C. Have the customer sign the check again if it has already been endorsed without your personal witness of the signature

Example:



BANKAMERICA TRAVELERS CHEQUE

13 009 523 262

BankAmerica
Corporation
San Francisco
California U.S.A.
will pay this cheque
to the order of
in United States
Ten Dollars
in all other countries
at current buying rate
for Bankers Cheques
on New York

President

8000 0001 009523 262313

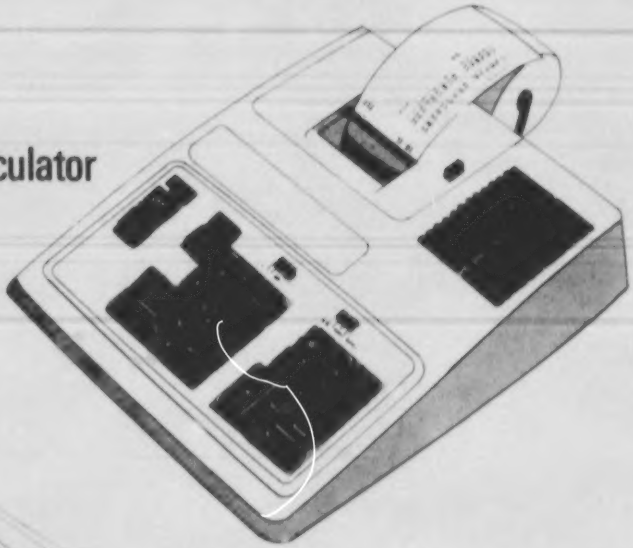
VI. Office machines commonly used in a parts house (Transparencies 1 and 2)

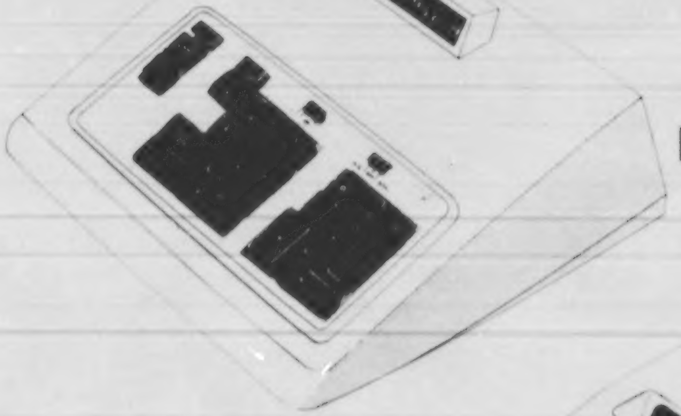
- A. Electronic print calculator
- B. Electronic display calculator
- C. Electronic display/print calculator

  (Note: 10-key adding machines are still in use, but modern business calculators have 12-key, 14-key functions, and even more, and some have a memory capacity; these modern calculators better serve business needs and are the ones a parts specialist will probably work with.)
- D. Portable electronic calculator
- E. Cash register (Transparencies 2 and 3)

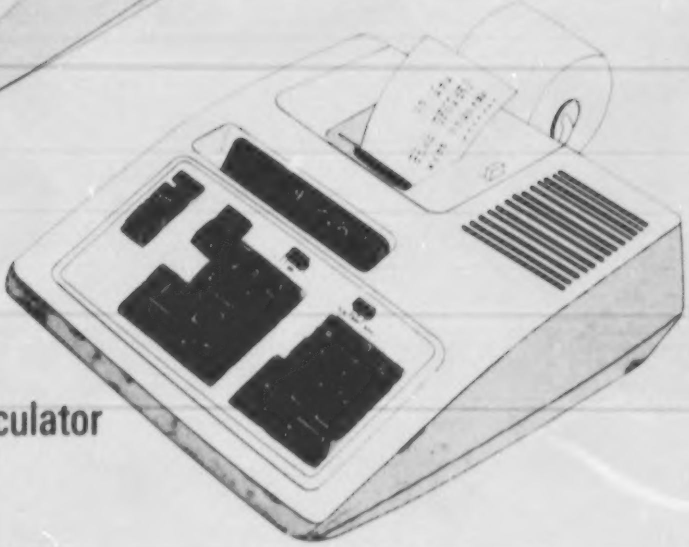
Office Machines Commonly Used in a Parts House

Electronic Print Calculator



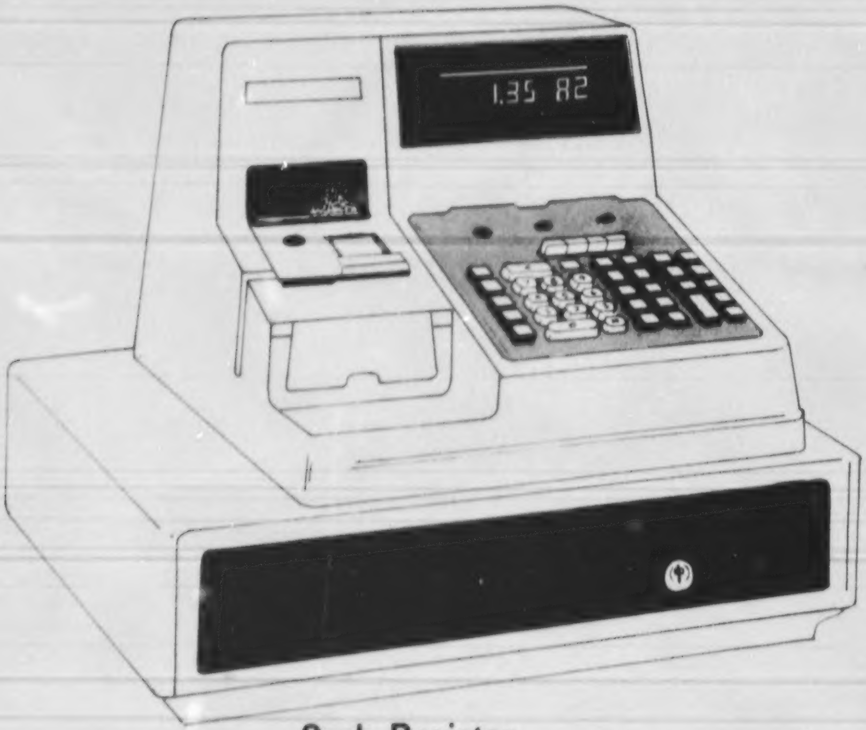


Electronic Display Calculator

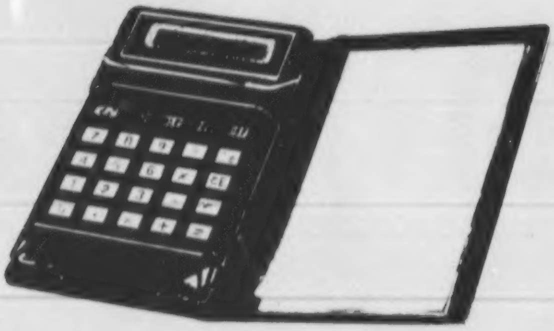


Electronic Display/Print Calculator

Office Machines Commonly Used in a Parts House (Continued)

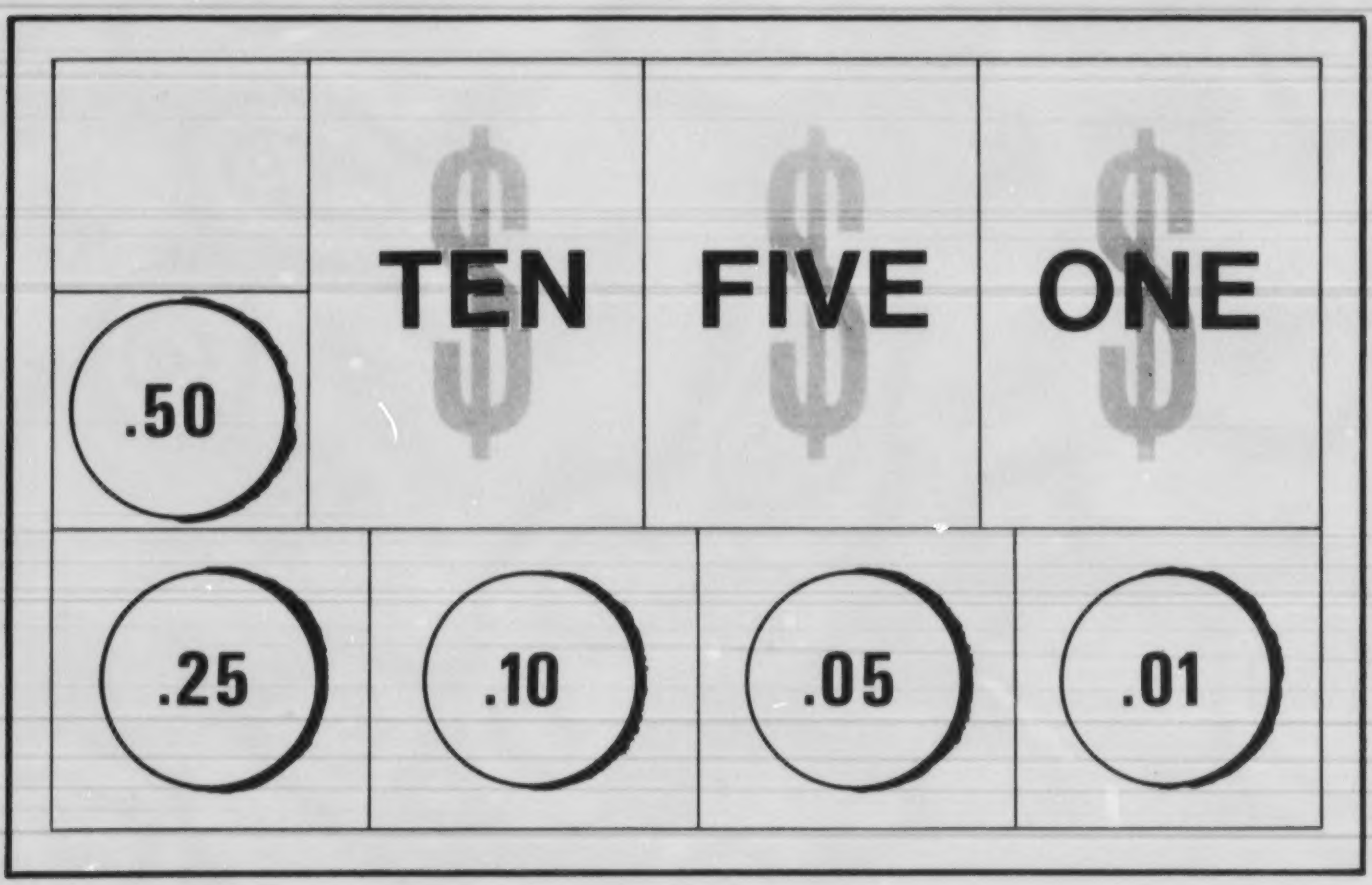


Cash Register



Portable Electronic Calculator

Sample Cash Drawer Layout


TEN
FIVE
ONE
.50
.25
.10
.05
.01

RELATED COUNTER SKILLS
UNIT XII

ASSIGNMENT SHEET #1--COUNT CHANGE

1. Leave the bill on the register while counting change.
2. When making change, give the customer the least number of coins and bills possible.

   Example: Instead of two dimes and a nickel, give them a quarter, instead of six $1 bills, give them a $5 bill and one $1. If you are out of larger denominations, however, you will have to use whatever you can.)

3. Repeat the amount of the sale and the amount of money received by the customer.
4. Count the money to yourself as it is taken from the cash drawer and then again back to the customer.
5. Begin with the smallest amount, and count back to the amount given by the customer.

   Example: For a $2.87 sale from a ten dollar bill, say, "That will be two eighty seven out of ten"; then count out three pennies as "two eighty-eight, two eighty-nine, two ninety," then one dime, "three dollars," then two one dollar bills, "four dollars, five dollars," and a five dollar bill, "and five makes ten. Thank you."

6. Use the fewest number of coins and bills and record the correct amount of change for each sale listed.

   Example:

Sales No.	Amount of sale	Amount Rec'd	COINS					BILLS			
			1¢	5¢	10¢	25¢	50¢	$1	$5	$10	$20
Example	$ 6.73	$10.00	2			1		3			
1	$12.33	$20.00									
2	$ 7.88	$20.00									
3	$23.07	$40.00									
4	$ 3.00	$50.00									
5	$ 7.14	$20.00									
6	$ 8.12	$10.00									
7	$ .78	$10.00									

RELATED COUNTER SKILLS
UNIT XII

ASSIGNMENT SHEET #2--FIGURE SALES TAX

Sales tax tables (use the one applicable in your area)

Two percent tax table	
Amount of Coins	Tax
$ .00 - $ .48	$ .00
$ .49 - $ .74	$ .01
$ .75 - $ .99	$ .02

Four percent tax table	
Amount of Coins	Tax
$ .00 - $ .14	$ .00
$ .15 - $ .39	$ .01
$ .40 - $ .64	$ .02
$ .65 - $ .89	$ .03
$ .90 - $ .99	$ .04

Three percent tax table	
Amount of Coins	Tax
$ .00 - $ .14	$ .00
$ .15 - $ .44	$ .01
$ .45 - $ .74	$ .02
$ .75 - $ .99	$ .03

Five percent tax table	
Amount of Coins	Tax
$ .00 - $ .08	$ .00
$ .10 - $ .29	$ .01
$ .30 - $ .49	$ .02
$ .50 - $ .69	$ .03
$ .70 - $ .89	$ .04
$ .90 - $1.09	$ .05

1. Figure tax on the dollar amount of the item first.
2. Use the tax table to figure the tax on the coins.
3. Add the tax on the bills and the tax on the coins together for the total tax.
4. Add the total tax to the amount of purchase.

Example: Purchase of $3.50 with a 5% sales tax

$3.00	.50 = $ .03	.15 (tax on $3.00)	$3.50
X .05	(See tax table)	.03 (tax on $ .50)	+ .18
.1500		.18 total tax	$3.68

5. Figure sales tax for the following purchases using the tax table for your area, and place your answers in the blanks.

_____a. $ 0.49

_____b. $ 2.98

_____c. $ 10.47

_____d. $ 0.99

_____e. $ 5.75

ASSIGNMENT SHEET #2

_____f. $ 5.65

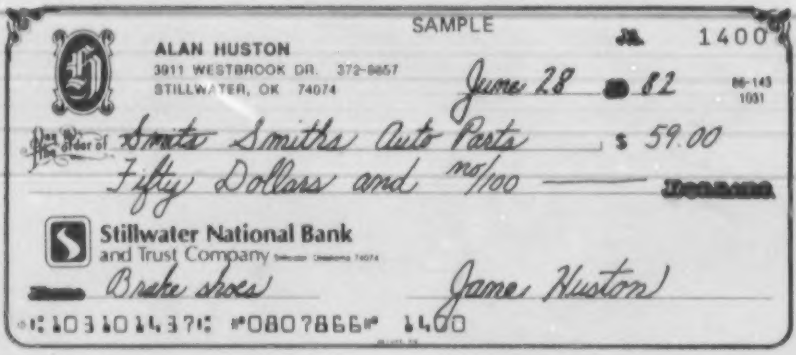
_____g. $ 0.66

_____h. $105.33

RELATED COUNTER SKILLS
UNIT XII

ASSIGNMENT SHEET #3--ACCEPT CHECKS

Under both of the following checks, list all the errors you can find. The checks were received on July 30, 1982.



SAMPLE

[illegible] 1400

ALAN HUSTON
3911 WESTBROOK DR. 372-9657
STILLWATER, OK 74074

June 28 [illegible] 82

86-143
1031

Pay to the order of ~~Smits~~ Smiths Auto Parts $ 59.00

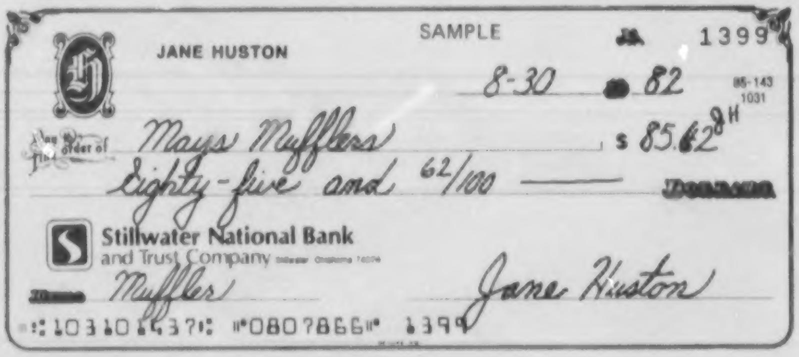
Fifty Dollars and no/100 —— DOLLARS

Stillwater National Bank
and Trust Company Stillwater Oklahoma 74074

Memo Brake shoes

Jane Huston

⑆103101437⑆ ⑈0807866⑈ 1400



SAMPLE

[illegible] 1399

JANE HUSTON

8-30 [illegible] 82

86-143
1031

Pay to the order of Mays Mufflers $ 85.82 JH

Eighty-five and 62/100 —— DOLLARS

Stillwater National Bank
and Trust Company Stillwater Oklahoma 74074

Memo Muffler

Jane Huston

⑆103101437⑆ ⑈0807866⑈ 1399

RELATED COUNTER SKILLS
UNIT XII

ANSWERS TO ASSIGNMENT SHEETS

Assignment Sheet #1

Sales No.	Amount of sale	Amount Rec'd	COINS					BILLS			
			1¢	5¢	10¢	25¢	50¢	$1	$5	$10	$20
1	$12.33	$20.00	2	1	1		1	2	1		
2	$ 7.88	$20.00	2		2			2		1	
3	$23.07	$40.00	3	1	1	1	1	1	1	1	
4	$ 3.00	$50.00						2	1		2
5	$ 7.14	$20.00	1		1	1	1	2		1	
6	$ 8.12	$10.00	3		1	1	1	1			
7	$ .78	$10.00	2		2		4		1		

Assignment Sheet #2

Answers will vary with local tax tables.

Assignment Sheet #3

1. a. Many businesses will not accept checks over thirty days old.
   b. Corrections without the initials of the person writing the check.
   c. Number amount and written amount are different.
   d. Signature is not the same as name printed on check.

2. a. Post-dated checks may not be cashed until that date arrives.
   b. No address on check; if it is not printed on the check it should be written in.

RELATED COUNTER SKILLS
UNIT XII

JOB SHEET #1--OPERATE A CREDIT CARD MACHINE

I. Materials

A. Credit card machine

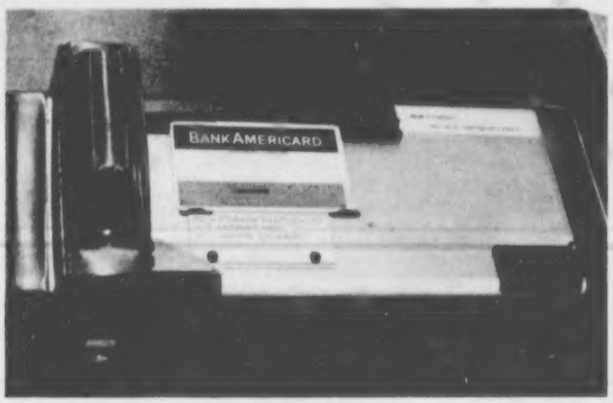
B. Credit card

C. Credit card forms

II. Procedure

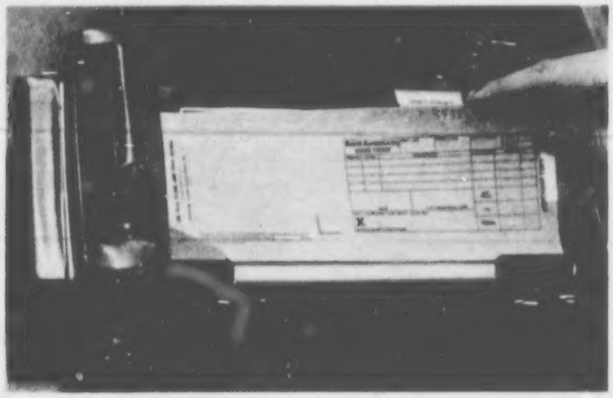
A. Place the credit card face up in the slots on the machine (Figure 1)

FIGURE 1



B. Place the credit card form face up in the slots on the machine and over the face of the credit card (Figure 2)

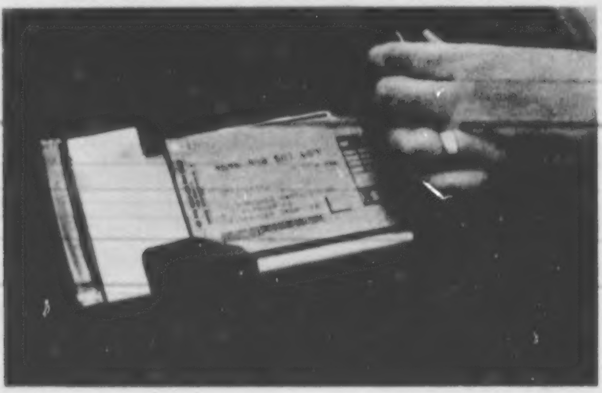
FIGURE 2



JOB SHEET #1

C. Pull the handle of the machine over the card and form and then back to the starting position (Figure 3)

FIGURE 3

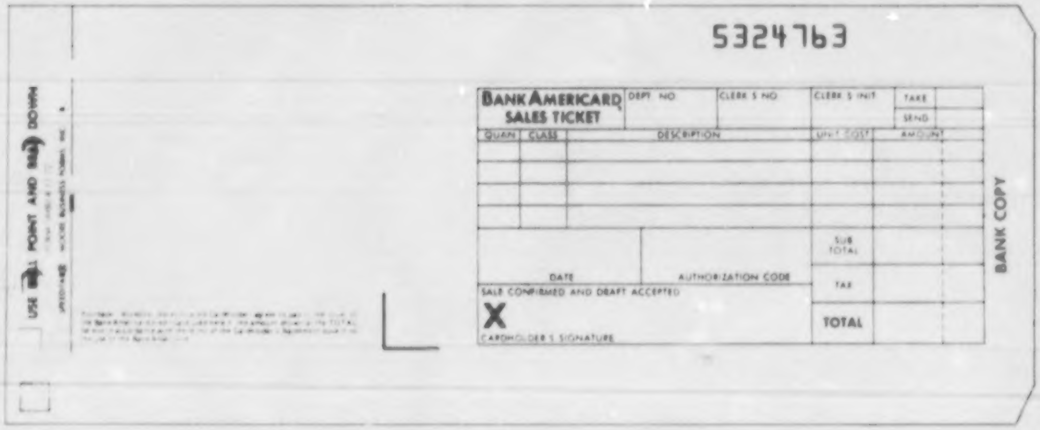


D. Remove the card and form from the machine

E. Fill out the credit card form for the following situation (Figure 4)

Sally Sue purchased one 8 X 10 painting for $16.00 and one frame for $7.50 from department 30, clerk number 60. The items will be mailed. Use the current date and local sales tax table.

FIGURE 4



5324763

BANKAMERICARD SALES TICKET

BANKAMERICARD SALES TICKET	DEPT NO	CLERK S NO	CLERK S INIT	TAKE SEND	
QUAN	CLASS	DESCRIPTION	UNIT COST	AMOUNT	
DATE		AUTHORIZATION CODE	SUB TOTAL		
			TAX		
SALE CONFIRMED AND DRAFT ACCEPTED X CARDHOLDER S SIGNATURE			TOTAL		

BANK COPY

USE BALL POINT AND BEAR DOWN

F. Ask the customer to sign the form and return the card to the owner

G. Give the customer his/her copy and keep the merchant and bank copies (carbon copies)

RELATED COUNTER SKILLS
UNIT XII

NAME ______________________________

TEST

1. Match the terms on the right with their correct definitions.

______ a. A reduction offered to customers who will use a particular item for resale or to make repairs

______ b. A discount given for the immediate or prompt payment of a bill

______ c. A reduction given to encourage customers to buy in large quantities

______ d. The invoice must be paid not later than 30 days from the date of the invoice

______ e. Indicates that the terms of payment are computed from the end of the month in which the purchase is made

______ f. Dating a check for a date later than when the check is written

______ g. Signature placed on the back of a check by the person cashing it

______ h. Order issued by a post office, bank, or telegraph office for payment of money at another office

______ i. Check guaranteed by deposits at the bank which issues the check; may be replaced if stolen; has to be signed at the bank and again in front of the person who cashes it

______ j. Showing the list price, net or customer's price, the customer's price times the quantity sold, the sub total of items purchased, tax, and the invoice total

______ k. Difference between cost of an item and retail price

______ l. Operating office machines using specific finger positions for faster speed, rhythm, and accuracy

______ m. Pricing in terms of quantities of more than one unit

1. Quantity discount
2. Endorsement
3. Trade discount
4. Mark-up
5. Money order
6. Multiple pricing
7. Net 30
8. Touch method
9. Traveler's check
10. Cash discount
11. E.O.M.
12. Extending prices
13. Post dating

2. Select true statements concerning the procedure for accepting checks by placing an "X" in the appropriate blanks.

______ a. Post-dated checks may not be cashed until that date arrives

______ b. Most businesses will accept checks over thirty days old

______ c. The amount needs to be written clearly in numbers and words

______ d. If the amount written in words is different from the amount written in numbers, the bank will not accept the check

______ e. The customer needs to initial any corrections on the dates or amounts

______ f. Write in customer's address if none is shown or if only a post office box is printed on the check face

______ g. Observe store rules for getting checks approved, limits on the amount of the check, and on accepting two-party, out-of-town, or company payroll checks

______ h. Asking for proper identification is not necessary

______ i. Make sure the signature on the identification matches the signature on the check

______ j. The written signature does not have to be the same as the printed name on the check

______ k. Do not accept checks written in pencil

______ l. Do not accept checks marked "For Deposit Only"

______ m. You may accept company checks with the company name typed on the face of the check rather than printed on the face of the check

______ n. Do not accept checks without an account number or with altered account numbers

______ o. Verify with your supervisor all questionable checks

3. Select true statements concerning the procedure for accepting credit cards by placing an "X" in the appropriate blanks.

______ a. Make sure the card is one your business accepts

______ b. Expiration dates are not important and therefore should be ignored

______ c. Make sure the signature on the receipt matches the signature on the card

______ d. Check the credit card number with the warning list of bad, lost, or stolen cards

______ e. It is not necessary to contact the credit company for authorization if suspicion arises _____f. If you discover a stolen card, simply refuse to accept it

_____g. Write in credit card numbers which do not print clearly when the card is put through the machine

4. List three special precautions for handling money orders.

a. ________________________________

b. ________________________________

c. ________________________________

5. Complete a list of precautions for handling travelers checks.

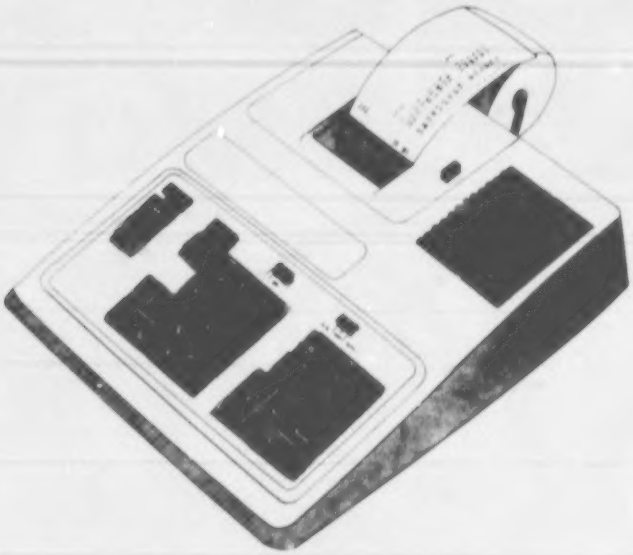
a. Have customer sign check in the presence of the person cashing it

b. Compare the customer's signature with the signature on the front of the check made at the time the checks were purchased at the bank

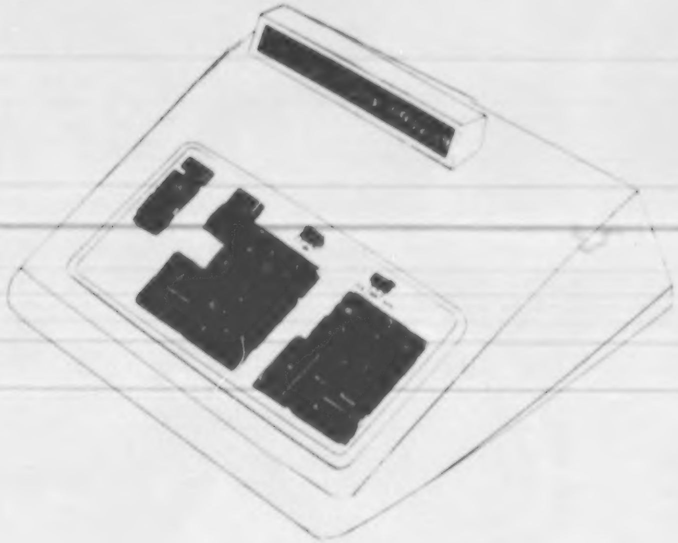
c. ________________________________

____

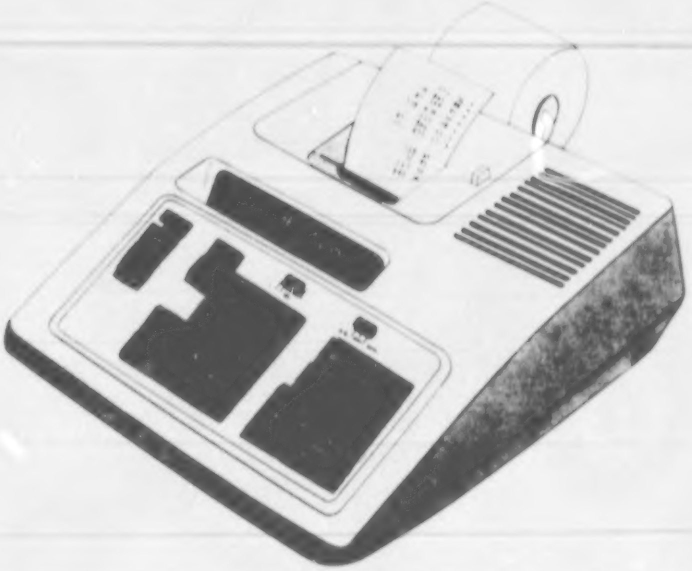
6. Identify the following office machines commonly used in a parts house.



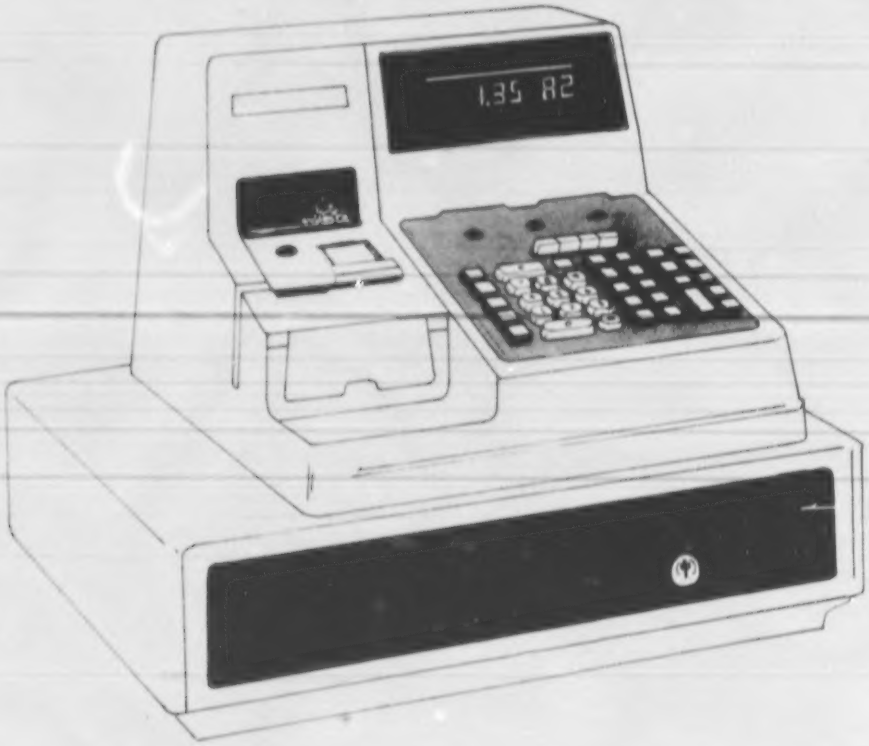
a. ________________________________



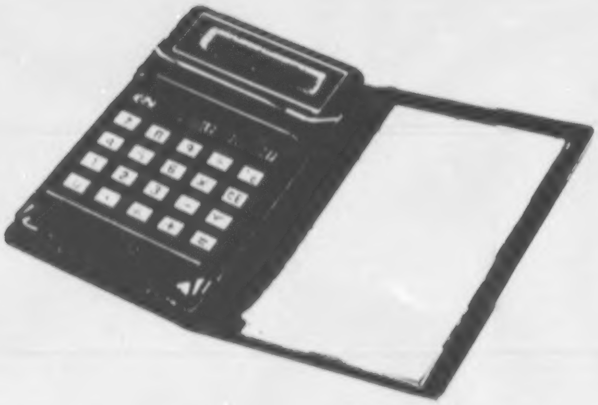
b. ______________________________



c. ______________________________



d. ______________________________



e. ______________________________

7. Count change.
8. Figure sales tax.
9. Accept checks.
10. Demonstrate the ability to operate a credit card machine.

(NOTE: If these activities have not been accomplished prior to the test, ask your instructor when they should be completed.)

RELATED COUNTER SKILLS
UNIT XII

ANSWERS TO TEST

1. a. 3
   b. 10
   c. 1
   d. 7
   e. 11
   f. 13
   g. 2
   h. 5
   i. 9
   j. 12
   k. 4
   l. 8
   m. 6

2. a, c, e, f, g, i, k, l, n, o

3. a, c, d, g

4. a. Do not accept checks in payment for money orders
   b. Do not cash if the amount has been altered, erased, or if the amount is in excess of the printed limit
   c. Notice the dates and signatures as carefully as if it were a regular check

5. c. Have the customer sign the check again if it has already been endorsed without your personal witness of the signature

6. a. Electronic print calculator
   b. Electronic display calculator
   c. Electronic display/print calculator
   d. Cash register
   e. Portable electronic calculator

7. Evaluated to the satisfaction of the instructor

8. Evaluated to the satisfaction of the instructor

9. Evaluated to the satisfaction of the instructor

10. Performance skills evaluated to the satisfaction of the instructor

SALES AND MERCHANDISING
UNIT XIII

UNIT OBJECTIVE

After completion of this unit, the student should be able to discuss the traits of a successful salesperson and the procedures for waiting on customers. The student should also be able to list the purposes of displays and identify basic display arrangement and discuss their effective placement. This knowledge will be evidenced by correctly performing the procedures outlined in the job sheet and by scoring 85 percent on the unit test.

SPECIFIC OBJECTIVES

After completion of this unit, the student should be able to:

1. Match terms related to sales and merchandising with their correct definitions.
2. Arrange in order five basic sales steps.
3. Select from a list traits of a successful salesperson.
4. Arrange in order the procedures for waiting on customers.
5. Identify basic display arrangements.
6. List purposes of displays.
7. Select true statements concerning the placement of interior displays.
8. Suggest solutions to problems concerning major types of advertising media.
9. Demonstrate the ability to design a display.

SALES AND MERCHANDISING
UNIT XIII

SUGGESTED ACTIVITIES

I. Provide student with objective sheet.

II. Provide student with information, assignment, and job sheets.

III. Make transparencies.

IV. Discuss unit and specific objectives.

V. Discuss information sheet.

VI. Discuss and demonstrate the procedures outlined in the job sheet.

VII. Role play among students on "making a sale."

VIII. Take students on field trip and let them evaluate different displays.

XI. Have students practice making displays in class.

X. Make arrangements with local parts stores or dealerships for students to make actual displays for stores.

XI. Have students plan an ad for a newspaper.

XII. Give test.

INSTRUCTIONAL MATERIALS

I. Included in this unit:

   A. Objective sheet

   B. Information sheet

   C. Transparency Master 1--Basic Display Arrangements

   D. Job Sheet #1--Design a Display

   E. Test

   F. Answers to test

II. References:

A. Nelson, Frank W. *Distributive Education II*. Stillwater, OK 74074: Curriculum and Instructional Materials Center, Oklahoma State Department of Vocational and Technical Education, 1976.

B. *AWAE Counterman's Guide*. Springfield, IL: Automotive Wholesalers of Illinois, 1974.

C. Sumpter, Tom. *Basic Auto Parts Training*. Fairview, OR: 1980.

SALES AND MERCHANDISING
UNIT XIII

INFORMATION SHEET

I. Terms and definitions

   A. Selling--Ability to influence a customer to buy a product

   B. Related selling--Persuading customer to purchase additional parts or tools associated with the items they originally came in to buy

   C. Closing a sale--Question designed to bring forth a positive answer confirming customer's choice of merchandise

      Example: "Which kind of brake shoes do you need today--new or rebuilt?"

   D. Promotional display--Display which attempts to sell specific merchandise

   E. Open display--Display used to show merchandise so that the customer may touch it

   F. Closed display--Display where merchandise is protected from handling, dust or theft; usually enclosed by glass

   G. Point of purchase display--Display used to show merchandise near related items, at the end of aisles, or by the check-out counter

   H. Suspension display--Display in which merchandise is hung in mid-air by thin wire or string

II. The basic sales steps

   A. Welcome or greet the customer

   B. Seek the customer's needs

   C. Present merchandise and give product information

   D. Overcome objections and excuses

   E. Close the sale

      (NOTE: When closing, try not to give the customer an opportunity to back away from the purchase, but do not beg for the sale, as this makes you and your product look bad.)

III. Traits of a successful salesperson

   A. Confidence

   B. Perseverance

   C. Honesty

   D. Reliability

INFORMATION SHEET

E. Tact

F. Poise

G. Good grooming

H. Reliability

I. Enthusiasm

J. Conversational ability

K. Self control

L. Product knowledge

IV. Procedure for waiting on customers

A. Recognize the customer

B. Write *entire* customer order on scratch pad

C. Suggest related items, if appropriate

(NOTE: Sometimes customers forget related parts or tools needed to complete a job, so it is helpful if the counterperson can anticipate these needs.)

Example: If a customer wants a set of brake shoes, ask if brake fluid, wheel or master cylinder kits, or brake tools will be needed for the brake job.

D. Take scratch pad containing customer's entire order and look up all part numbers and prices before going to the shelf

E. Go to bins and fill the order

F. Invoice the sale

G. Offer to pick up or order any parts that you do not have in stock

H. If parts boxes are dirty, dust them off and place customer's order in a sack or box, if necessary

I. Thank customer and let him/her know you appreciate the business

V. Basic display arrangements (Transparency 1)

A. Stair step

B. Pyramid

C. Zig-zag

D. Repetition

E. Dump

INFORMATION SHEET

VI. Purposes of displays

- A. To sell merchandise and ideas
- B. To bring customers into the store
- C. To build an image of a prestige store or a bargain store
- D. To suggest combinations of merchandise
- E. To introduce new or seasonal items and uses for products
- F. To remind customers of items they may have forgotten

VII. Placement of interior displays

(NOTE: Interior displays should not block the view from front to back of store--this helps prevent shoplifting.)

- A. To the right of doors--people tend to look and move to the right first
- B. In windows or on ledges
- C. Near elevators and stairs
- D. At the ends of aisles
- E. On sales counter

(NOTE: It is important to keep displays clean.)

VIII. Major types of advertising media

- A. Newspaper
  - 1. Advantages
    - a) Widely read
    - b) Relatively inexpensive
  - 2. Disadvantage--has a short reading life
- B. Radio
  - 1. Advantages
    - a) Large diversified audience
    - b) Can be repeated frequently
    - c) Relatively inexpensive

INFORMATION SHEET

2. Disadvantages

   a) May waste coverage on many people who are not potential customers

   b) Is not suited for products that must be seen to develop customer interest

C. Television

1. Advantages

   a) Large diversified audience

   b) Good for national advertising

   c) Easy to show demonstration of a product

2. Disadvantage--is expensive

D. Yellow pages

1. Advantages

   a) Large diversified audience

   b) Provides a permanent reference to special services and operating hours

      (NOTE: Studies by Chilton Research Services indicate that more than 75 million people inquire about auto parts and supplies every year, and more than 40 million of these people use the yellow pages.)

   c) Is usually immediately available

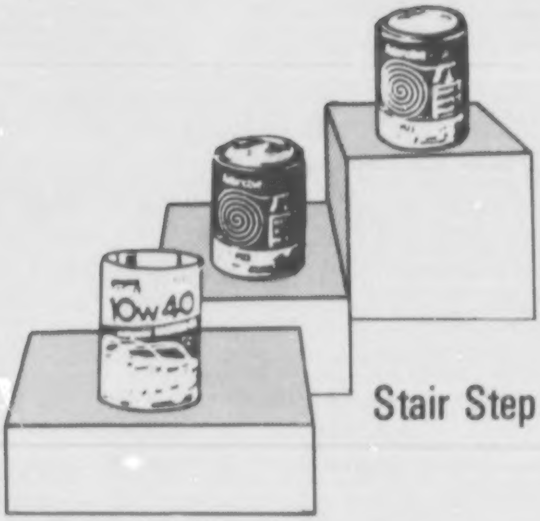
   d) Is a highly promoted service

2. Disadvantages

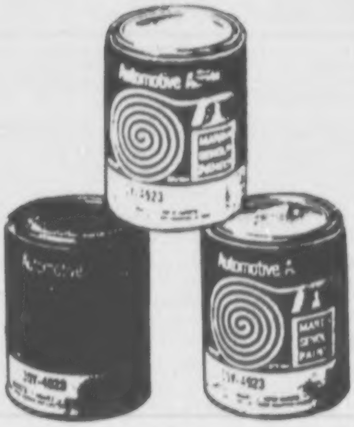
   a) Difficult to show demonstration of product

   b) Difficult to use for special sales or seasonal promotions

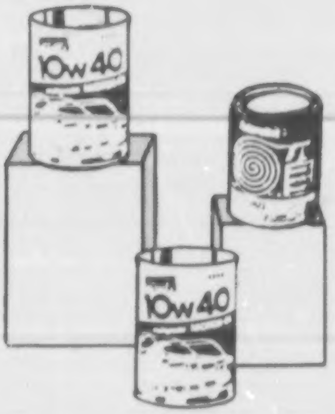
Basic Display Arrangements



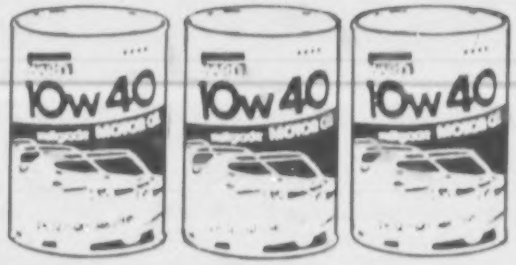
Stair Step


Automotive A
Automotive
Automotive A

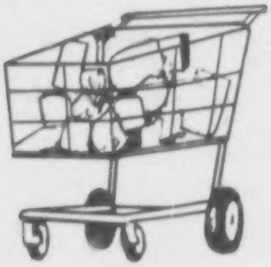
Pyramid


10w40
10w40

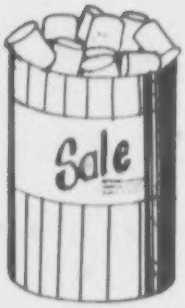
Zig-Zag


10w40
MOTOR OIL
10w40
MOTOR OIL
10w40
MOTOR OIL

Repetition



Dump



SALES AND MERCHANDISING
UNIT XIII

JOB SHEET #1--DESIGN A DISPLAY

I. Materials

- A. Variety of parts to be displayed
- B. Boxes, stands, tables, and other props

II. Procedure

- A. Select one of the basic display arrangements
  1. Stair step
  2. Pyramid
  3. Zig-zag
  4. Repetition
  5. Dump
- B. Select parts you wish to include in your display
- C. Collect boxes, stands, or tables needed for your arrangement
- D. Sketch your display on scratch paper
- E. Clean the display area
- F. Make display as eye-catching and effective as possible
- G. Emphasize merchandise, not the background
- H. Have students and teacher evaluate your display when finished

SALES AND MERCHANDISING
UNIT XIII

NAME ______________________________

TEST

1. Match the terms on the right with their correct definitions.

______a. Ability to influence a customer to buy a product

______b. Persuading customers to purchase additional parts or tools associated with the items they originally came in to buy

______c. Question designed to bring forth a positive answer confirming customer's choice of merchandise

______d. Display which attempts to sell specific merchandise

______e. Display used to show merchandise so that the customer may touch it

______f. Display where merchandise is protected from handling, dust, or theft; usually enclosed by glass

______g. Display used to show merchandise near related items, at the end of aisles, or by the check-out counter

______h. Display in which merchandise is hung in mid-air by thin wire or string

1. Closed display
2. Suspension display
3. Closing a sale
4. Open display
5. Promotional display
6. Selling
7. Point of purchase display
8. Related selling

2. Arrange in order five basic sales steps by placing the correct sequence number in the appropriate blank.

______a. Overcome objections and excuses

______b. Close the sale

______c. Welcome or greet the customer

______d. Present merchandise and give product information

______e. Seek the customer's needs

3. Select from the following list the traits of a successful salesperson by placing an "X" in the appropriate blanks.

_____a. Confidence

_____b. Constant smile

_____c. Honesty

_____d. Reliability

_____e. Tact

_____f. Low-key personality

_____g. Poise

_____h. Good grooming

_____i. Reliability

_____j. Gaudy clothes

_____k. Enthusiasm

_____l. Conversational ability

4. Arrange in order the procedure for waiting on customers by placing the correct sequence number in the appropriate blank.

_____a. Offer to pick up or order any parts that you do not have in stock

_____b. Take scratch pad containing customer's entire order and look up all part numbers and prices before going to shelf

_____c. Write *entire* customer order on scratch pad

_____d. Recognize the customer

_____e. Suggest related items, if appropriate

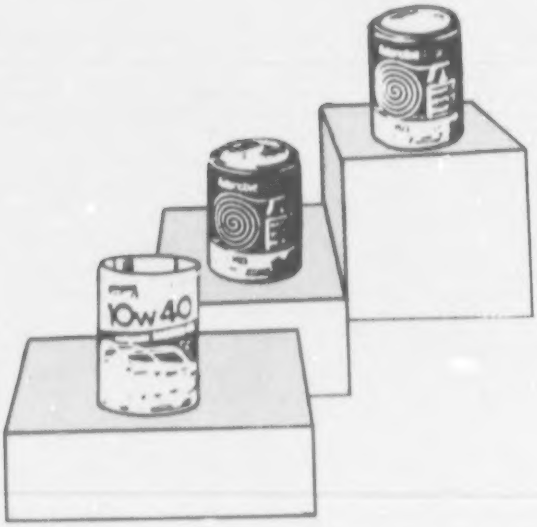
_____f. Go to bins and fill the order

_____g. If part boxes are dirty, dust them off and place customers order in a sack or box, if necessary

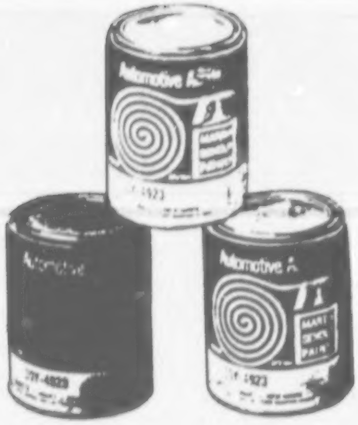
_____h. Thank customer and let him/her know you appreciate the business

_____i. Invoice the sale

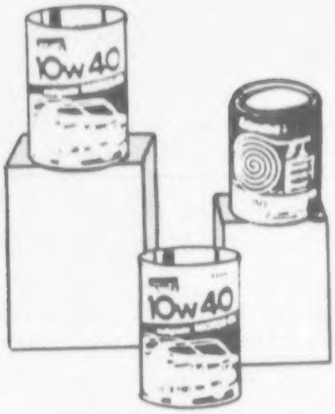
5. Identify the following basic display arrangements.



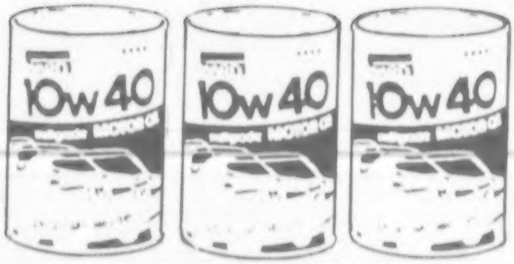
a. ______________________________


Automotive A.
Automotive A.

b. ______________________________


10w40
10w40

c. ____


10w40
MOTOR OIL
10w40
MOTOR OIL
10w40
MOTOR OIL

d. ____

e. ______________________________

6. List four purposes of displays.

a. ______________________________

b. ______________________________

c. ______________________________

d. ______________________________

7. Select true statements concerning the placement of interior displays by placing an "X" in the appropriate blanks.

_____a. To the left of doors--people tend to look and move to the left first

_____b. In windows or on ledges

_____c. Never close to elevators and stairs

_____d. At the ends of aisles

_____e. On sales counter

8. Suggest solutions to the following problems concerning major types of advertising media:

a. A store wants to promote a new tool that is difficult to talk about, but easy to explain with an illustration; since the budget is limited, which advertising medium do you suggest?

____

b. A store is planning an advertising campaign to promote a new low-cost gasoline additive; other stores have succeeded with this promotion by reaching a diversified audience with ads that are repeated frequently; since the store is in a community with a weekly newspaper and a radio station, what advertising medium would you suggest?

____

c. A store is planning its annual advertising budget and wants to reach as many people as possible to talk about their free local delivery service, their stock of foreign car parts, and their operating hours; what advertising medium would you recommend?

____

9. Demonstrate the ability to design a display.

(NOTE: If this activity has not been accomplished prior to the test, ask your instructor when it should be completed.)

SALES AND MERCHANDISING
UNIT XIII

ANSWERS TO TEST

1. a. 6
   b. 8
   c. 3
   d. 5
   e. 4
   f. 1
   g. 7
   h. 2

2. a. 4
   b. 5
   c. 1
   d. 3
   e. 2

3. a, c, d, e, g, h, i, k, l

4. a. 7
   b. 4
   c. 2
   d. 1
   e. 3
   f. 5
   g. 8
   h. 9
   i. 6

5. a. Stair step
   b. Pyramid
   c. Zig-zag
   d. Repetition
   e. Dump

6. Any four of the following:
   a. To sell merchandise and ideas
   b. To bring customers into the store
   c. To build an image of a prestige store or a bargain store
   d. To suggest combinations of merchandise
   e. To introduce new or seasonal items and uses for products
   f. To remind customers of items they may have forgotten

7. b, d, e

8. a. Newspaper
   b. Radio
   c. Yellow pages

9. Performance skills evaluated to the satisfaction of the instructor